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THE
AMERICAN ECLECTIC
PRACTICE OF MEDICINE;

BY

I. G. JONES, M. D.,

LATE PROFESSOR OF THE THEORY AND PRACTICE OF MEDICINE IN "THE ECLECTIC MEDICAL
INSTITUTE OF CINCINNATI," ETC., ETC.

EXTENDED AND REVISED AT REQUEST OF THE AUTHOR

BY

WM. SHERWOOD, M. D.,

PROFESSOR OF MEDICAL PRACTICE AND PATHOLOGY IN "THE ECLECTIC COLLEGE
OF MEDICINE;" FORMERLY PROFESSOR OF GENERAL, SPECIAL AND
PATHOLOGICAL ANATOMY IN "THE ECLECTIC MED-
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CONTENTS.

SPECIAL PATHOLOGY AND THERAPEUTICS.

LOCAL DISEASES—CONTINUED.

LECTURE XXXVIII.

- Laryngitis: Division; Acute Form, Light Attacks, Symptoms; More Serious Cases, Symptoms—Constitutional and Local; Anatomical Characters; Causes; Treatment; Reference to Authors; Treatment of General Washington; Special Indications; Emetic; Cupping; Bathing; Diet; Chronic Form, Synonyms; Epidemic in 1830; Affects Mucous Follicles; Influence on Voice; Impairs General Health; Causes; Diagnosis; Prognosis; Post-mortem; Treatment; Use of the Probang; Elongated Uvula; Enlarged Tonsils; General Indications, - - - 17

LECTURE XXXIX.

- Croup: General Remarks; Description of Croup; Three Modifications; 1, Spasmodic, Symptoms; 2, Inflammatory, Symptoms; 3, Pseudo-membranous, Symptoms; Cases Cited; Diagnosis; Anatomical Relations; Quotation from Dr. Meigs; Cases Cited; Quotations from Dr. Meigs and Dr. Wood, - - - 38

LECTURE XL.

- Croup, continued: Peculiar views explained; Causes of Croup; Prognosis; Treatment; Of spasmodic Croup; Of the inflammatory form; Of pseudo-membranous; Cases cited; Strictures on certain modes of treatment, - - - 53

LECTURE XLI.

- Physical Diagnosis: General Remarks; Position of patient; Object to be attained; Phenomena to be observed; Manner of Percussion; Pleximeter; Auscultation defined; Different sounds in health explained; Abnormal respiratory sounds; Modifying circumstances; Vocal sounds; Friction sound; Importance of physical exploration, - - - - - 71

LECTURE XLII.

- Bronchitis: Varieties; Acute, Mild Attacks, Symptoms; Periodic Febrile Symptoms; More Severe Grade, Symptoms; Brain Affected; Generally Modified by Malaria; Physical Diagnosis; Anatomical Developments; Cause; Treatment; Subsequent Cough; Remedy; Diet; Remarks on Bleeding, - - - 84

LECTURE XLIII.

- Chronic Bronchitis: Modifications; Symptoms; Remarkable case; Supervention of acute symptoms; Physical symptoms; Prognosis; Treatment; Emetics; Purgatives; Tonics; Diet; Chalybeates; Restorative bitters; Bathing; Palliative for Cough; Counter-irritation not reliable; Exercise important, - - - 95

LECTURE XLIV.

- Pleuritis: Characteristic symptoms; Location of pain; The cough; Associated fever; Physical signs,—Before effusion, After effusion; Other modes of diagnosis; Autopsy; Cause; Diagnosis; Prognosis; Treatment; Evils of blood-letting; Quotation from Magendie; Same author on antimonials; Emetics may be useful; Cupping; Cathartics; Sudorifics; Antiperiodics. Chronic Pleurisy: Character; Treatment, - - - - - 102

LECTURE XLV.

Pneumonia: Varieties based on extent and location of disease; Distinctions arising from complications; Symptoms; Commencement; Progress; "Flag of Truce;" Physical Signs; Favorable termination; Abscesses; Bilious Pneumonia; Typhoid Pneumonia; Diagnosis; Prognosis; Causes; Pathology, - - -	118
--	-----

LECTURE XLVI.

Pneumonia, continued: Treatment; Bleeding improper; Experiments of a German Physician; Proper treatment given; Cause to be removed; Correct the secretions; Emetics; Cathartics; Hepatic treatment, when necessary; Expectorants; Recapitulation; Treatment, when complicated; Periodicity; Bilious symptoms; Typhoid form, - - - - -	130
---	-----

LECTURE XLVII.

Pulmonary Emphysema: General Remarks; Generally a secondary affection; Symptoms; Physical signs; Morbid appearances; Causes; Prognosis; Treatment. Asthma: Definition; Characteristic symptoms; Physical signs; Causes; Prognosis; Treatment, - - - - -	140
---	-----

LECTURE XLVIII.

Phthisis: General Remarks; Formerly deemed incurable; Modern views more favorable; Symptoms of predisposition; Scrofulous diathesis; Symptoms of Phthisis; Tuberculous substance; Rapidity of formation; Extent of deposits; Its structure or real character; Symptoms of pulmonary changes; First stage; Second stage; Quotation from Dr. Clarke; Third stage; Quotation from Dr. Tweedie; Quotation from Dr. Clarke; Complications, - - - - -	156
---	-----

LECTURE XLIX.

Phthisis, continued: Physical symptoms; Tuberculous matter; Quotation from Dr. Clarke; Morbid anatomy; Quotation from the same; Causes; Diagnosis; Prognosis; Treatment; Change of climate; Exercise, - - - - -	176
---	-----

LECTURE L.

Phthisis, continued: Diet; Bathing; Medicinal remedies; Chalybeates; Quotation from Dr. McDowell; Iodine; Prescriptions for cough; Cod-liver oil; Last stage; Diarrhea; Hemorrhage; Local applications; Inhalations, - - - - -	199
--	-----

LECTURE LI.

Inflammation of the Heart: General Remarks; General symptoms of cardiac Inflammation; Physical symptoms; Auscultation; Palpation; Percussion, - - - - -	223
---	-----

LECTURE LII.

Inflammation of the Heart, continued: Diagnostic symptoms; Anatomical developments; Treatment, - - - - -	237
--	-----

LECTURE LIII.

Hypertrophy and Dilatation of the Heart: More frequent than most other cardiac affections; Morbid conditions; Physical signs; Complications; Distinction between Hypertrophy and Dilatation; Causes; Prognosis; Treatment. Nervous affections of the Heart: Palpitation; Description; Causes; Diagnosis; Treatment, - - - - -	248
---	-----

LECTURE LIV.

Hepatitis: Preliminary Remarks; Two forms—Acute and chronic; Acute form; Symptoms and complications; Course and duration; Anatomical relations; Causes; Tendency of Mercury; Use of Stimulants; Prognosis; Treatment, - - - - -	269
---	-----

LECTURE LV.

Chronic Disease of the Liver: Symptoms, local and constitutional; Causes; Diagnosis; Prognosis; Anatomy; Treatment; Modified by complications; Other morbid conditions noticed. Biliary Calculi—gall stones: Definition; Concretions described; Chemical composition; Various forms according to Vogel; Their development; Effect on the system; Treatment,—1st, Present relief,—2d, Change of diathesis, - - - - -	282
---	-----

LECTURE LVI.

Jaundice: Symptoms described generally; Bile pigment in healthy blood; Characteristic symptoms of Jaundice; Constitutional disturbance; Course variable; Post-mortem; Causes; Treatment,—Leading indications; Jaundice in young children, - - - - -	293
---	-----

LECTURE LVII.

Mercury: Reference to past; Reasons for discarding Mercury; Has done more harm than good; Respectable professional opinions quoted; Dr. Dixon; Its use in hepatic and venereal affections; Quotations from Dr. I. Hays; Quotations from M. Desruelles, - - - - -	302
--	-----

LECTURE LVIII.

Mercury, continued: Its application to hepatic disorders; Witnesses pro and con; Quotations from Dr. Tweedie and others; Want of unity; Mercury ruled out in structural disease; Also in functional; Quotations from Dr. Hamilton; Mercury a poison; Changed to corrosive sublimate in the stomach; Injurious effects in various affections; Observations of Dr. Hamilton and Dr. Carlisle; the Author's views and experience, - - - - -	323
--	-----

LECTURE LIX.

Splenitis: Parts of the Organ involved; Symptoms; Generally associated with fever; Autopsy; Prognosis; Diagnosis; Causes; Treatment. Chronic Disease of the spleen: Great diversity of Symptoms and Conditions; Enlargements most common; Causes; Morbid anatomy; Prognosis; Treatment, - - - - -	338
---	-----

LECTURE LX.

Nephritis: Seldom Idiopathic; Different Structures involved; Associated organs affected. Acute Nephritis: Local Symptoms; Constitutional Disturbance; Changes in urinary Secretions; Urinary Calculi; Diagnosis; Of gravel connected with Nephritis; Translation of Gout or Rheumatism; Neuralgia, etc; Terminations; Anatomical Relations; Causes; Treatment under different Causes and Complications. Chronic Nephritis: Symptoms; Post-mortem; Treatment, - - - - -	347
--	-----

LECTURE LXI.

Cystitis: Acute form; Symptoms; Extension of the Inflammation; Febrile reaction; Post-mortem; Diagnosis; Prognosis; Causes; Treatment; Chronic form; Frequency; Symptoms; Prognosis; Post-mortem; Causes; Treatment, - - - - -	362
--	-----

LECTURE LXII.

Bright's Disease of the Kidneys: Synonyms; Acute and Chronic Forms; Nature of the Local Difficulty; Symptoms, General and Diagnostic; Post-mortem; Causes; Prognosis; Treatment, - - - - -	372
--	-----

LECTURE LXIII.

- Diuresis: Preliminary Remarks; Definition; Excessive Secretion, or Diabetes Insipidus; Treatment. Diabetes Melitus: Description; Local and general Symptoms; Condition of Urine; Pathological Anatomy; Quotations,—Prof. Tweedie, Prof. J. R. Buchanan; Causes; Prognosis; Treatment; Illustrated by cases, - 384

LECTURE LXIV.

- Suppression of Urine: Difference between Suppression and Retention; Suppression Described; Effects on the Constitution; Causes of these Effects; Causes of Suppression; Treatment. Retention of Urine: Description; Different Forms from Different Causes; Treatment. Incontinence of Urine, or Enuresis: Description; Treatment, - - - - - 401

LECTURE LXV.

- Syncope: Definition; Symptoms; Causes; Diagnosis; Treatment. Asphyxia: From Drowning; Treatment; From Strangulation; Treatment; From Cold; Treatment. Angina Pectoris: Symptoms; Neuralgic Character; Causes; Peculiar Affection; Diagnosis; Prognosis; Treatment, - - - - - 413

LECTURE LXVI.

- Anæmia, or Chlorosis: The subject limited; Distinguished from Puerperal Anæmia; Symptoms of Chlorosis; Symptoms of Puerperal Anæmia; Causes; Prognosis; Treatment, - - - - - 434

LECTURE LXVII.

- Scurvy: Reference to History; Various theories; Nature; Symptoms; Anatomical characters; Causes; Diagnosis; Treatment. Purpura: Symptoms; Duration; Causes; Diagnosis; Treatment, - - - - - 448

LECTURE LXVIII.

- Hemorrhage: General Considerations; Spontaneous Hemorrhages; Reference to various Divisions; Practical Divisions; Constitutional, Vicarious, Critical, etc; Condition of the Blood; Active Hemorrhage; Passive Hemorrhage; Causes; Treatment, - - - - - 467

LECTURE LXIX.

- Epistaxis: Description; Treatment. Stomatorrhagia: Description; Treatment. Hematemesis: Idiopathic, or Secondary; Loss of Blood varies in Quantity; Diagnosis; Causes; Treatment, - - - - - 481

LECTURE LXX.

- Hemoptysis: General Remarks; Predisposing Circumstances; No Age exempt; General and Diagnostic Symptoms; Causes; Prognosis; Post-mortem; Treatment, - - - - - 495

LECTURE LXXI.

- Menorrhagia: Definition; Active and Passive Forms; Symptoms of Active Menorrhagia; Symptoms of Passive Form; Causes; Treatment. Intestinal Hemorrhage: Rarely occurs Idiopathically; May originate in Stomach; May attend Fevers; Amount of Evacuations Various; Anatomical Developments; Diagnosis; Causes; Treatment. Hematuria: Symptoms; Diagnosis; Causes; Pathology; Treatment, - - - - - 510

LECTURE LXXII.

- Dropsy: Definition; Two General Forms,—Serous and Fibrinous; Serous Dropsy most Common; Fluid described; Its Origin; Condition of the Blood; Provisions of

Nature to Prevent and Remove Dropsical Effusions; Test of Serous Fluid;—Fibrinous Dropsy; Chemical Composition; Cause of Variation; Origin of the Fluid; Symptoms of Dropsy in General; Causes; Prognosis; Treatment, - 529

LECTURE LXXIII.

Hydrothorax: Definition; Symptoms; Percussion and Auscultation; Anatomical Character; Causes; Treatment. Hydropericardium: Symptoms; Causes; Treatment. Ascites: Definition; Symptoms; Dissection; Diagnosis; Causes; Prognosis; Treatment. Ovarian Dropsy: Description; Encysted Tumors. Anasarca: Symptoms; Diagnosis; Causes; Treatment, - - - - 547

LECTURE LXXIV.

Cutaneous Diseases: General Remarks. Vesicular Diseases: Species. Herpes: Characteristic Symptoms; Varieties; Causes; Treatment. Eczema: Varieties Described; Cause; Treatment. Scabies, or Itch: Nature and Symptoms; Causes; Treatment. Bullæ: Two Modifications; Pemphigus; Description; Treatment;—Rupia; Description; Causes; Treatment. Pustulæ: Varieties; Impetigo, or Moist Tetter; Character; Causes; Treatment;—Porrigo, or Scald-Head; Description; Causes; Nature; Treatment. Exanthemata: Varieties; Erythema; Description; Diagnosis; Causes; Treatment, - - - - 567

LECTURE LXXV.

Cutaneous Diseases, continued. Urticaria, or Nettle-Rash: Character; Symptoms; Diagnosis; Causes; Treatment. Erysipelas: Symptoms; Varieties; Anatomical Character; Causes; Diagnosis; Prognosis; Treatment. Scaly Diseases.—Psoriasis: Different Forms Described; Causes; Treatment. Lepra, or Leprosy: Description; Causes; Treatment, - - - - 584

CONTAGIOUS DISEASES.

LECTURE LXXVI.

On Contagion.—Small-Pox, or Variola: Symptoms and Course; First Stage; Second Stage; Third Stage; Confluent and Distinct Forms; Varioloid, or Modified Small-Pox; Results from Partial Protection; Various Hypotheses; Author's Views; Progress; Morbid Anatomy; Cause; Diagnosis, - - - - 603

LECTURE LXXVII.

Variola, continued: Treatment; Prevention of Pitting; Prophylactic Measures. Vaccine Disease: Character; Origin; Experiments of Dr. Martin; Author's Experiments; Symptoms of Genuine Kine-Pox; Difference of Susceptibility; Protective Influence; Best Time for Vaccination; Importance of Healthy Matter; Mode of Vaccination; Re-vaccination, - - - - 619

LECTURE LXXVIII.

Scarlatina, or Scarlet Fever: Various Grades; Three Varieties; Symptoms; Scarlatina Simplex; S. Anginosa; S. Maligna; Sequelæ; Morbid Anatomy; Cause; Second Attacks; Diagnosis; Prognosis; Treatment, - - - - 639

LECTURE LXXIX.

Rubcola, or Measles: Premonitory Symptoms; General Symptoms; Eruption; Diversities; Anatomical Relations; Cause; Diagnosis; Prognosis; Treatment. Vari-cella, or Chicken-Pox: Symptoms; Cause; Diagnosis; Treatment. Parotitis, or Mumps: Symptoms; Metastasis; Treatment, - - - - 657

LECTURE LXXX.

- Pertussis, or Hooping-Cough: Course and Symptoms; Diagnosis; Prognosis; Nature; Treatment; Use of Belladonna, - - - - - 671

LECTURE LXXXI.

- Typhus Fever: Synonyms; Premonitory Symptoms; Symptoms During the Fever,—Heat, Pulse, Condition of Alimentary Canal; Thoracic Symptoms; Nervous Symptoms; Stupor and Coma; The Countenance; State of the Senses,—of the Muscles; The Cutaneous Eruption; The Blood; Forms and Varieties; Convalescence; Duration; Anatomical Changes; Causes; Diagnosis; Prognosis; Nature; Treatment, - - - - - 683

NERVOUS DISEASES.

LECTURE LXXXII.

- General Remarks. Apoplexy: Definition; Symptoms; Duration; Anatomy; Causes; Diagnosis; Prognosis; Treatment, - - - - - 699

LECTURE LXXXIII.

- Epilepsy: Symptoms; Variations in Manifestations; Effects on General System; Anatomy; Causes; Diagnosis; Prognosis; Treatment, - - - - - 711

LECTURE LXXXIV.

- Delirium Tremens: Evils of Intemperance Generally; Legislation Required; Cause of Delirium Tremens; Symptoms and Stages; Complications; Diagnosis; Prognosis; Anatomy; Treatment; Opium and other Common Remedies; Author's Practice, Quotations from Dr. Gerhard, - - - - - 726

LECTURE LXXXV.

- Rheumatism: Preliminary Remarks; Nature of Rheumatism; Divisions; Acute, Description, Anatomy; Subacute Rheumatism; Difference Pointed Out; Chronic Rheumatism; Description; Nervous Rheumatism; Description; Causes of Rheumatism in General; Diagnosis; Prognosis; Treatment of Different Forms in Order, - - - - - 746

LECTURE LXXXVI.

- Spinal Irritation: Its Relation to Rheumatism; Protean Manifestations; Pulmonary Affections; Dyspepsia; Laryngeal Disease, etc; Diagnosis; Treatment; Quotation from Dr. John Marshal; Concluding Observations. Paralysis, or Palsy: Definition; Divisions; Rarely Idiopathic; General Palsy; Hemiplegia; Paraplegia; Local Palsy; Causes; Diagnosis; Prognosis; Treatment. Hydrophobia: General Observations; Cases Related, and Treatment; Conclusion, - - - - - 760

ON SCROFULA, OR STRUMA.

LECTURE LXXXVII.

- Scrofula, or Struma: Definition and Synonyms; Local Scrofula; Symptoms; The Tubercular Deposit, When it Occurs, Its Effects, Character, Cause, and Relation to Pulmonary Tubercle; Scrofulous Cachexy, Symptoms, Exciting Causes, Predisposing Causes, Predisposition to; Symptoms of Predisposition; Treatment, for the Local Affection, for the Constitutional Disease; Prevention; Diet; Hygiene, 780

LECTURES

ON

SPECIAL PATHOLOGY AND THERAPEUTICS.

LECTURE XXXVIII.

. LOCAL DISEASES—CONTINUED.

Laryngitis: Division; Acute Form, Light Attacks, Symptoms; More Serious Cases, Symptoms—Constitutional and Local; Anatomical Characters; Causes; Treatment; Reference to Authors; Treatment of General Washington; Special Indications; Emetic; Cupping; Bathing; Diet; Chronic Form, Synonyms; Epidemic in 1830; Affects Mucous Follicles; Influence on Voice; Impairs General Health; Causes; Diagnosis; Prognosis; Post-mortem; Treatment; Use of the Probang; Elongated Uvula; Enlarged Tonsils; General Indications.

LARYNGITIS, OR INFLAMMATION OF THE LARYNX.

This disease, like most other inflammatory affections, may with propriety be divided into the *acute* and *chronic* forms. I shall consider first the *acute* form of laryngitis. This when fully developed is a distressing and rapid disease, especially if not promptly and appropriately treated. It is of rare occurrence in its fully-developed form, unless complicated with affections of the trachea. I do not however propose to consider it in that connection, although it is very rare for either of these parts to be seriously involved without more or less disorder of the other; but I shall reserve the diseases of the trachea for a separate consideration.

Slight attacks of laryngitis are among the most common affections, and are recognized by a change in the sound of the voice, as well as by other symptoms of cold. The voice in some cases is only slightly altered, as indicated by hoarseness or partial suppression; while in other instances it is almost or entirely suppressed. I need not inform you that the larynx is the organ of voice, and that affections of its lining membrane must always, according to the

greater or less degree of its involvement, change, modulate, or wholly destroy the voice and impair the powers of articulation. In mild forms of this disease, the inflammation first shown in the larynx gradually extends down into the trachea and bronchial tubes, thus becomes diffused, and is shortly thrown off by expectoration. Such is the course of those common attacks of cold and influenza so often met with during the variable weather of winter and spring.

In many cases however the attack does not pass off so quickly, but frequently continues for some days and even weeks, developing symptoms of a more general character. In this event, an irritating cough with little expectoration except of glairy mucus, and some difficulty of breathing, will be found to exist, as well as a more decided alteration in the voice, amounting in some cases to great hoarseness and in others to an inability to articulate louder than a whisper. Accompanying these cases, a slight febrile excitement and other symptoms of general disturbance are very common, though often so moderate as scarcely to attract attention. But careful observation will generally discover an accelerated pulse, some thirst, scanty and high-colored urine, furred tongue, costive bowels, and usually a slight increase of the temperature of the body at night. These symptoms often continue for some days, and then decline with an increase of all the secretions previously diminished, and especially a more free, opaque, and yellow mucous expectoration. This may occur spontaneously, or it may be brought about by the moderate use of mild expectorant and aperient medicines.

But in the more grave form of laryngitis, involving both the mucous and submucous cellular tissues, more general and important constitutional disorder, and far more urgent and distressing local symptoms are developed, requiring prompt and efficient therapeutic measures. This modification is often attended by a distinct chill, followed by a high grade of febrile reaction, and all the attendant symptoms of inflammatory disease. A distinct soreness is felt in the larynx, extending often to the fauces and pharynx, and producing difficulty in swallowing; there is also hoarseness of the voice, with a distinct sensation of stricture or tightness, accompanied with a hoarse or stridulous cough, with which there is very little expectoration, and that of a clear and viscid character. Difficulty of breathing, amounting in some instances to a sense of suffocation, is experienced, often accom-

panied by a prolonged wheezing inspiration, requiring considerable effort to accomplish it. Upon examining the throat, the whole surface presents a flushed or reddened appearance, while the epiglottis may be seen standing erect, of a bright red color and more or less swollen. This is often the case to an extent sufficient to prevent the descent of the epiglottis to close the glottis, which is always necessary in the act of deglutition, as otherwise substances in the attempt to swallow would fall into the larynx and produce strangulation. Thus the act of deglutition becomes difficult, if not entirely prevented, and the secretions from the surrounding parts are constantly trickling down the glottis and producing cough and a sensation of strangling. These difficulties may be owing in part to the swelling in the tonsil glands and fauces which sometimes accompanies the disease, but more probably to the swelling in the epiglottis by which it is prevented from closing the glottis.

Together with these local symptoms, those of a general character present a severity somewhat proportioned to the extent and gravity of the local difficulty. The voice becomes more wheezing or entirely extinct; respiration more laborious or difficult; the cough a mere suppressed wheezing, accompanied with a painful effort and a sense of suffocation; the skin is dry and increased in temperature; the pulse is frequent and full, tongue coated, bowels costive, and the urinary secretions scanty and high colored. While these symptoms are present, the patient is generally restless and uneasy, often changing his position, either walking about the room or having the doors and windows opened, with a view to obtain fresh air; and if in bed, moving from side to side, frequently starting up suddenly as if a new mode of obtaining relief had occurred to him, and after remaining a few moments in a sitting posture, lying down again.

As the disease progresses he becomes more dull and drowsy, but is unable to sleep more than a few minutes at a time from the constant tendency to the accumulation of mucus in the throat, and the consequent necessity of coughing and expectorating. In this stage of the case, the force of the pulse begins to fail, the circulation becomes more feeble, and the blood in the vessels of the lips, face, and extremities begins to exhibit evidences of imperfect aëration. The lips exhibit a purplish color, and contrast strikingly with the sunken paleness of the face; while the eyes, encircled with the same livid hue, exhibit a staring, projected, and watery appearance.

The extremities become cold, the pulse irregular and weak, the sufferings of the patient are increased by the exhausting efforts at a more full respiration, and these symptoms are soon followed by a cold sweat, failure of the pulse at the wrist, a drowsy and comatose condition, and he at length sinks into the arms of death with all the appearance of asphyxia.

I have thus endeavored to give you a short and concise description of laryngitis as it is usually met with, including the two modifications of the disease recognized by modern authors, to wit: the most common and mild form, which is described as confined to the mucous membrane alone, and the more rare but far more severe modification, in which the submucous cellular tissue is involved, producing the embarrassment in the respiratory functions before described. I have not thought proper to recognize a third modification, to wit: the pseudo-membranous, as that form of disease will hereafter be particularly discussed in connection with croup.

The *anatomical* developments are what would naturally be expected. In cases that have proved suddenly fatal, there is merely an engorgement of the vessels, both in the mucous and submucous or cellular membranes, closing up the air-passage. In some instances the swelling of the glottis is so extensive as nearly or entirely to fill up the chink of the glottis and obstruct the passage, and the epiglottis becomes edematous and stiff, so that it can not rise and fall. Bloody serum is sometimes effused through the cellular tissue, while the mucous membrane is highly inflamed and engorged with blood. In severe and protracted cases, an effusion of coagulable lymph is deposited in patches upon the mucous surface of the larynx. The immediate cause of death in these cases is no doubt a physical impediment to the ingress of air through the larynx, and a consequent want of the necessary aëration of the blood, and the patient sinks into a state of asphyxia, with but little disorganization of the parts involved in the disease.

The *cause* of this form of disease, where a predisposition exists, may be exposure to cold. Sitting in a draft while the system is relaxed is perhaps one of the most common exciting causes, especially if the individual is in a perspiration. There are some persons who have a very striking and peculiar predisposition to inflammation of the larynx, owing to weakness of the parts, either hereditary or acquired. A very common predisposing influence is loud and long-continued speaking, and hence we frequently find it among public speakers. The inhalation of irritating gases, or hot

air; the swallowing of hot and corrosive liquids; in short any thing that injures or greatly irritates the mucous membrane of the throat and larynx, may be the exciting cause. It is sometimes associated with tonsillitis, and I have seen two well-defined cases growing out of scarlet fever. It is also occasionally associated with measles, the mucous membrane of the trachea and bronchial tubes being universally affected in this disease. It has been known to result from mercurial inflammation of the mouth or salivation, and is mentioned by some of the authorities as following mercurial disease. You will generally find it connected with or dependent on derangement of the stomach.

The *treatment* should be prompt and efficient in the severe form of laryngitis; but in the mild form first referred to, very little treatment is required. Slight counter-irritation over the throat will be useful in mild cases; or the patient, on going to bed, should apply to the throat a towel wrung out of cold water. This will generally relieve the patient before morning. Or you may apply a mustard poultice over the part, and if the case is of some severity, this may be followed by a hot fomentation of hops covered with dry flannel. In connection with these local means you may administer the boneset sirup, and perhaps a mild aperient to act slightly on the bowels. The antidyspeptic pills (*pil. aloes comp.*), or a Seidlitz powder will usually be sufficient. Frequently the boneset sirup, together with friction on the throat with tinct. camphor, will answer. Of course the efficiency of the treatment should depend on the violence of the disease.

Perhaps there is no disease upon which there is greater unanimity in the books than in regard to the treatment of the early stage of this affection. Almost every author recommends bleeding, though as to the time at which this means should be resorted to there is great diversity of opinion; and in view of the unqualified confidence with which this remedy is recommended by the authorities, we would naturally expect the results of practice to justify the theory. But what is the result? You may be surprised at the statement that not one half the cases of laryngitis treated by active depletion recover. Tweedie, Vol. III., page 76, says: "Laryngitis has been considered by Dr. Cheyne and others, to be the most fatal of all the inflammations. Of seventeen cases observed by Bayle during six years, only one recovered. Of twenty-eight cases collected from various authors by Mr. Ryland, ten recovered, which he justly considers to be above the average. In most of the fatal

cases, death took place between the first and fifth days. The prognosis must therefore in all cases be unfavorable; and the more so, as the disease has lasted longer and with progressive increase of the difficulty of breathing." Now in view of such admissions, the first suggestion to my mind is, that the treatment is wrong. There may indeed be some diseases, the half of which after a certain stage, will necessarily prove fatal. And in fact the most simple disease that tends to prove fatal at all, after it passes the point at which the proper remedy can be relied on, will prove fatal, and it is so with laryngitis. Yet we are directed to resort to bleeding in laryngitis with no more positive instruction in regard to the remedy, than a vague direction to apply it at some period in the early stage, and we are also told that when we do use it a majority of the cases will prove fatal. In the face of such results we find Tweedie indorsing the directions of Dr. Cheyne, who "recommends free blood-letting, but not to syncope, as advised by Dr. Baillie, for this may deprive the patient of strength sufficient to struggle against the next spasmodic paroxysm of dyspnœa." And Tweedie further says: "Active depletory measures employed early may for a time relieve the symptoms without removing the inflammation; they often only delay the effusion, which with its resulting permanent increase of difficulty of breathing and appearance of lividity, instead of taking place in the first day, may not come on for several days." * * * "Some few cases have yielded to bleeding alone, and its employment should never be neglected *when the strength can bear it.*" Wood also says: "In the violent cases described under the title of *submucous laryngitis*, it is of the utmost importance to employ active remedies promptly. If postponed until the purple lips and livid paleness of the face indicate an insufficiently aerated blood, they will be of little avail. In the early stage, if not forbidden by the debility of the patient, blood should be taken very freely. In a robust adult, from twenty to thirty ounces may be drawn at the first bleeding, and the operation repeated once or oftener if necessary. The loss of blood should stop short of syncope." Now if "few cases" are benefited, and not one half recover in any event, does it not appear somewhat unreasonable to persevere with a measure which must reduce the patient to a condition only short of syncope? There appears to me to be a total absence of true philosophy in such teachings, and our doctrine of the influence of blood-letting will apply here as in other inflammatory diseases, only perhaps with more force.

Dr. Armstrong mentions a case where the patient was bled 160 ounces within four hours, and notwithstanding this died! In another case, he says the patient was bled to approaching syncope, and strange as it may appear the case proved fatal! Surely so potent a remedy ought to have saved him, or at least you ought to be quite sure that some little relief would be obtained before resorting to such a measure!—though in all seriousness I think we are justified in asserting that you might as well expect to save a man's life by cutting his throat. And what is really strange to me, is that sensible men have so long pursued this fatal course without discovering it to be such. I ask any one who has read the history of Washington's treatment, if he was not a victim of this practice? It has been said by English medical writers, that General Washington fell a victim to malpractice; and I ask any one to review the treatment pursued by the attendant physicians, and say whether the active depletion, and the amount and kind of medication to which Washington was subjected, would not probably have proved fatal at his time of life, even he had been in perfect health? He took tartar emetic enough to have produced inflammation of the stomach and bowels, and in connection with that, calomel and various expectorants were administered, until the venerable patriot besought them to let him die without further interruption, and he finally sank under the combined influence of the disease, and the extraordinary treatment he had received, having been bled three or four times, and having lost at least 75 or 80 ounces of blood in the short space of less than twenty-four hours.

In cases of this disease associated with derangement of the *stomach*, a thorough emetic will be necessary, not a single discharge, but a complete and thorough evacuation of the contents of the stomach. The influence of this measure in equalizing the circulation and promoting the secretion of the mucous surfaces of the trachea and bronchial vessels is too well understood to require comment. Lobelia and sanguinaria, with a little boneset perhaps, is the remedy upon which I would mainly rely. The sanguinaria is decidedly sedative in its influence, and as an expectorant exercises a specific effect on the trachea and bronchial tubes. It should be continued until a full and free evacuation of the stomach is effected, and then followed by a thorough cathartic. Perhaps the compound powder of senna and jalap with cremor tartar will answer as well as any thing else. Its influence on the circulation as well as on the local inflammation will be sensibly realized.

Another local measure, not less important in violent cases, is the application of cups to each side of the larynx. Objections have been made to the application of leeches in such cases, from the fact that their bites are sometimes followed by effusion, which is never the case where cups are used. Cupping exercises a revulsive influence in diverting the engorgement to the superficial vessels. This should be followed by a soft onion poultice, applied to the throat once in two hours as hot as the patient can bear it. A general and free perspiration should be induced, and for this purpose you may give the compound powder of ipecac. and opium or the compound tincture of serpentaria virg., but perhaps the most efficient remedy is some narcotic preparation that does not lock up the secretions. Hyoseyamus will answer a good purpose, and this should be assisted by mild diaphoretic teas, with the constant use of the sanguinaria and boneset sirup. These means should be repeated more or less frequently according to the urgency of the case; and especially the emetic.

The acetous tincture of sanguinaria and lobelia, as a substitute for the one already mentioned, given in tablespoonful doses with warm boneset tea, is a very valuable preparation, and should be administered every fifteen minutes, and repeated a number of times if necessary. By adding a sufficient quantity of loaf sugar to the acetous tincture, you will have a very good expectorant sirup, which may be given in teaspoonful doses every fifteen or twenty minutes, as the urgency of the case seems to demand. If the case proves obstinate and unyielding, the cupping should also be repeated every day, or oftener if necessary, and should be followed as before directed, by the onion poultice, or a hot hop fomentation. The system should be kept more or less constantly under the moderate influence of mild and soothing anodyne antispasmodics, for which purpose, small doses of compound tincture of serpentaria, or a pill of hyoseyamus and camphor may be given, the first in teaspoonful doses repeated once in two or three hours, as may be necessary, and the latter in doses of one to three grains each and repeated as circumstances may demand. In this as in all other inflammatory affections, the condition of the skin should receive particular attention. Frequent bathing in broke water and whisky will be found to exercise great influence on the febrile symptoms, and afford comfort to the patient by quieting the restlessness characteristic of this disease. This may be repeated once in two or three hours.

[I have found an inhalation as hot as it can be borne, of steam from an infusion of hops in vinegar to afford great relief in very severe cases. The inhalation should be continued from six to ten minutes at a time, and repeated every three or four hours. A fomentation of hops, or of hops, wormwood and stramonium should at the same time be applied to the neck. S.]

The *dict* in all these cases should be of a very simple farinaceous and fluid character, such as rice water, weak tea, etc., or an entire suspension of aliment would be beneficial, unless food is demanded.

CHRONIC LARYNGEAL DISEASE.

Chronic disease of the larynx is known by the common appellations of *chronic laryngitis*, *bronchitis*, or *minister's sore throat*, and if not of modern origin, is at least of modern discovery, as it is only within the last twenty-five years that we have had any acquaintance with it. That the disease really had no previous existence, may with great propriety be doubted, as we are not familiar with any peculiar circumstances in the history of the human race sufficient to account for its recent production. We are therefore led to suppose that the recent prominence given to the affection by medical writers, is the result of a more familiar acquaintance with the symptoms it develops, and a more accurate knowledge of the condition of the organs upon which those symptoms depend, than the profession formerly possessed.

About the year 1830, this affection attracted special attention, as at that time there was a very general prevalence of an epidemic influenza, producing, no doubt, a disease of the mucous membrane of the air-passages, and probably involving to a greater or less extent, the mucous follicles or glands, thus creating a predisposition, or leaving an impression upon the system, favorable to the development of this particular affection, which has since been carefully studied and more fully understood. I am well convinced that this affection did exist long previous to the period from which its scientific history dates. For I well recollect a number of instances in which individuals, greatly out of health, became aphonic, or lost their voice, when I was a boy. Whatever the real disease, in one or two instances to which I refer, it was solemnly believed, that the infliction was a divine visitation for the violation of some law, and it was equally considered a providential interposition when the patients were restored. One case especially came under my notice which, though I am unable to express my opinion

founded upon a close examination of the general symptoms, yet I am fully convinced, from the similarity of the symptoms which I did observe and now remember, was in reality identical with the disease I am now considering.

In discussing this subject, I desire to impress upon your minds the distinction between chronic inflammation and the condition of the parts involved in this affection. The mucous membrane of the larynx may be the seat of chronic inflammatory action, resulting from the acute form, or following repeated attacks of cold. In such cases the diseased action will be confined to the mucous membrane proper, or to the submucous cellular structure of the larynx and adjacent or contiguous parts. But this form of disease is not very frequently observed, and when it does occur the appropriate treatment will not greatly differ from that which will be recommended for chronic diseases of the larynx, to which, instead of chronic inflammation, I shall chiefly confine my remarks at this time.

This disorder is mainly located in the mucous follicles or glands of the mucous membrane of the throat. Nearly all the mucous surfaces of the human body have appropriated to their use, glands or follicles, the functions of which seem to be to afford a secretion, necessary in some instances perhaps, to protect the surfaces of the membrane from irritation likely to result from substances coming in contact with them, and mainly no doubt, to eliminate the waste materials of the body and thereby keep up a healthy action of the system. The surface of the fauces, the lateral arches, the uvula, and the tonsils, have large numbers of these mucous follicles or glands appropriated to their use. The same structures extend down into the pharynx, larynx, trachea, and bronchial tubes. It is these glands or follicles that are the special seat of the disease under consideration. A close examination will disclose a marked difference in the appearance of the throat in the two affections. In chronic inflammation, the whole mucous membrane is slightly swollen, and presents a diffused redness more or less purple or highly colored; while in this disease, you will discover distinct patches of different shapes, sometimes striated and at others more conglomerated, of a rough and granulated appearance, the intervening spaces of the mucous membrane being smooth and healthy, or but slightly inflamed without much swelling. This appearance may extend in places over the whole throat, involving the uvula and palatine arches, and as far into the pharynx as you can see; or

it may be confined to much less space, but will be more especially apparent on the posterior fauces. For the purpose of more clearly indicating the appearances of these diseased follicles, I will remark that the mucous membranes lining the air-passages have, upon their inner surfaces, a very delicate and transparent epithelium, which, upon the occurrence of the disease, is very liable to be removed, but is readily reproduced. This delicate covering or lining of the mucous surfaces is very analogous to the cuticle of the skin. The transparent covering of the true skin, when examined through a glass or microscope, is found to be made up of irregular, flattened cell-like scales, arranged in part so as to overlap each other, the outer surface being dry and horny, while the inner surface is soft and granular, having its origin from nuclei on the surface of the membrane in contact with it. So the epithelium, or delicate covering or lining of the mucous membranes, appears to be made up of differently formed cells, in some situations and instances of a tessellated or pavement-like character, and in others of a cylindrical form, having something of a cone-like shape with their bases or large extremities pointing to the surface. Yet the two forms are often found passing into each other and originate from the same nuclei on the surface of the "basement membrane." These cells, when arranged to form this delicate epithelial covering, have upon their free surfaces a kind of ciliary formation, pointing in the direction of the outlet of the mucous membrane, and assisting in the more free emission of the mucous secretions from this epithelial membrane and the mucous follicles. Thus it will be seen that the inner surfaces of the air-passages and throat are lined with a smooth, soft, and continuous membrane, completely covering and hiding the follicles which are the seat of the disease under consideration, and liable, from slight diseased action, to be removed. In this affection the epithelial covering of the mucous glands is absorbed, and the exposed glands present the granulated and abraded appearance of irregular patches which I have before adverted to. Thus you will be enabled to recognize the disease.

It should be remarked in this connection, that these follicles, when thus exposed, present in different cases considerable difference in size and appearance. Thus, when the disease is brought on in serofulous subjects by repeated attacks of colds, and is associated with general derangement of the system, they will be found much larger and more prominent, often containing a yellowish white substance resembling and probably identical with tubercular

matter. In other cases, the whole fauces, pharynx, and tonsils, will be covered with a yellowish adhesive mucus, and will present a granulated appearance, in clusters, throughout their whole extent.

Thus I have endeavored to give you a description of the local appearances of laryngeal disease, and also the difference between it and chronic inflammation proper of the larynx. The symptoms accompanying this affection are unique. It is a disease of a most insidious character, often making serious inroads upon the general health, as well as upon the parts involved, before the individual is apprized of its peculiarity or its danger. The first sensation that is recognized, when the individual is alive to abnormal action, is an uneasiness in the upper part of the throat, inclining him to more frequent swallowing or hawking up the increased mucous secretion. Very soon a slight change will be observed in the sound of the voice. A slight hoarseness will be noticed, accompanied often with an occasional pricking sensation, which will be felt upon any unusual effort. And in that case there will be some difficulty in contracting the vocal organs, which is liable to be increased toward evening. It is however not unfrequently the case, that these symptoms are all slightly increased in the morning when the effort of speaking is first made, but most generally they are worse in the evening. The mucous secretion is generally more copious after eating, and often produces gagging and vomiting in the effort to dislodge and throw it off. There is very little coughing in the early stages of the disease, and frequently none at all; but when the uvula is involved and is greatly edematous and elongated, resting upon the base of the tongue or the side of the fauces, a dry hacking or tickling cough will exist. In some cases in this stage of the affection the symptoms all disappear, and the patient is apparently relieved; but upon taking a slight cold they all return somewhat aggravated.

Thus it may go on for some time, the symptoms disappearing and then returning, the patient meantime being in comparatively comfortable health, until the disease has made considerable progress and a physician is called. Gradually all the symptoms increase, and at length a severe and troublesome cough sets in, accompanied with a more free expectoration of matter, which is at first frothy and transparent, but if the disease extends into the bronchial glands, becomes opaque and friable, resembling pus. It thus closely simulates in its progress the general symptoms of consumption, for which it is often mistaken. It may however degen-

crate into true phthisis, and thus furnish a finale to the case. In almost any stage of the disease, singing or public speaking aggravates the symptoms, and in advanced stages, owing to the exalted state of the sensibilities of the nerves which are distributed to the parts involved, is often productive of severe suffering. The nerves of the mucous membrane and muscles of the larynx, are mainly derived from the superior and inferior laryngeal branches of the pneumogastric, par vagum, or eighth pair, forming an intimate relation with the stomach and lungs. These nervous ramifications often become the seat of exquisite sensibility, and occasion severe neuralgic pains.

As the disease progresses the voice becomes more rough, hoarse, and sometimes suppressed, or partially so. Sometimes the individual will be able to speak a sentence in an audible voice, while the next one will be in a whisper; or the audible articulation may be cut off in the midst of a single word, thus producing the discordant voice so characteristic of this disease. When however, it is entirely confined to the mucous follicles, without involving the muscular structure of the vocal organs, the voice will be much less affected; but most generally the muscular structure becomes involved and the voice is changed.

In most of the severe and protracted cases, the general health, if not previously affected, becomes impaired. Digestion is imperfect, as shown by gaseous eructations, there is general uneasiness and tenderness in the epigastrium, a red tongue, and a variable appetite, which is often voracious, but more commonly wanting. In this condition of the digestive organs, torpor of the bowels occasionally exists, while later in the disease there is a debilitating and exhausting diarrhea. The complication of symptoms will soon be followed by a more serious involvement of the bronchial mucous membrane and substance of the lungs, with a low grade of irritation; and if the patient be of a scrofulous constitution, tuberculous deposits will be made in the pulmonary structure, and from the predisposition to such deposits the local irritation invites a rapid accumulation, and the patient is hurried out of this life with all the symptoms of quick consumption.

Along with the symptoms I have described as more particularly diagnostic, those of a more common character rarely fail to make their appearance. The pulse gradually increases in frequency, and often becomes small and weak; the urine is highly colored, and as the disease progresses becomes less than in health; the skin gets

dry and harsh, and is slightly increased in temperature upon the body, but is cool at the extremities, and there is often a clammy state of the hands; the tongue becomes red at the tip and edges, and there is a wasting of the flesh and general debility.

The most common exciting *cause* of this affection is exposure to atmospheric vicissitudes. The system is very liable to be affected if exposed to a draft of air or a change of temperature, when in a state of perspiration after an effort of speaking or singing. But among the exciting causes, none is perhaps so general and widespread as that of influenza. While it may act as an immediate cause of the laryngitis as it ordinarily occurs, it has without doubt been greatly instrumental in the more general prevalence of that disease, by its predisposing effect upon the laryngeal mucous follicles. Hence this affection has attracted more particular attention since the occurrence of that most memorable epidemic influenza in 1830. Another very common exciting and predisposing cause, is found in the dyspeptic condition of the stomach attendant upon the habits of the clerical profession. In this condition, and the clergyman's daily or weekly habit of singing or speaking, we find conjoined the two most commonly exciting causes of chronic affections of the larynx, and hence the more frequent occurrence of this disease among clergymen. They are peculiarly liable to an attack after severe exercise of the vocal organs, especially if suddenly exposed to changes of temperature.

Common observation has very generally distinguished hereditary predisposition as one of the most powerful causes of this affection. Whether this predisposing condition is found in the peculiar organization of the structures involved in the disease, or whether it is entirely owing to the serofulous contamination of the system, is not very satisfactorily determined. The probabilities are that this predisposition may consist of either of these influences, or they may act conjointly. Climate may also exercise a predisposing as well as an exciting influence in the production of this disease. General debility, mental labor and anxiety are also considered among the predisposing causes, and within my own observation I have found a number of cases in which the only sufficient predisposing influence that could be ascertained was excessive venereal indulgence. And from the investigations I have given this subject, I am well convinced that the extent of this influence upon the system in general, and this affection in particular, has not been sufficiently appreciated, or at least has not been so fully diseussed by

systematic writers as its importance demands. In this remark I do not refer exclusively to those abuses connected with the venereal disease, but to those secret and solitary indulgences, which may at first be ignorantly practiced, but often are willfully indulged under the influence of a debasing appetite which grows by what it feeds upon. Nor do I refer to any particular class of community, but to very many in all classes of society, who are not sufficiently enlightened, and perhaps are culpably ignorant of the physiological laws of these particular functions.

Diagnosis.—The peculiar local symptoms, and the appearances presented upon an examination of the throat which I have already described, are sufficient to insure a correct diagnosis of this affection. The only diseases with which it is in any way liable to be confounded, are chronic inflammation of the larynx and genuine phthisis. From the first it will be distinguished by the granulated appearance of the throat, which is usually seen in patches, without swelling or much disease in the intervening mucous membrane. It is also associated with genuine consumption, both as the cause and as an effect of that disease. But the history of the case, and the condition of the lungs, as shown by a careful physical exploration, will be the main reliance in distinguishing the two diseases, and determining the relation they bear to each other.

Prognosis.—The probable result of this affection depends upon the condition of the general system, upon the progress or stage of the disease, and upon its complications. Its connection with a cachetic or serofulous condition of the system would render the result of a case doubtful and uncertain, more especially if it had advanced so as to involve the lungs and bronchial tubes. So also where extensive ulceration has taken place in the cellular structure, involving the cartilages of the larynx, the case may clearly be considered almost hopeless. But when but little complication is found to exist, and extensive disorganization has not occurred, the case may be looked upon, under appropriate treatment, as decidedly favorable. In view of all the complications with which the disease is usually found associated, in view also of the modern advances toward a correct knowledge of the disease, the perfect feasibility of entering the larynx for the purpose of local treatment, the present enlightened understanding of the pathology of the serofulous diathesis, and the results of modern therapeutic appliances for correcting this state of the system, chronic disease of the larynx may be regarded as generally curable.

The *post-mortem* developments will depend upon the complications connected with the disease in its progress. But all that is of interest in a practical point of view will be found in the larynx, or parts immediately associated with it. The lungs no doubt are involved more or less in most cases, and it is presumed, when examined, would present the ordinary phenomena of pulmonary disease. The larynx is found in different cases presenting varied states of disorganization, depending upon the complications that determined a more or less speedy and sudden fatal termination, varying from slight ulceration of the mucous follicles to deep-seated disorganization of the cartilaginous and muscular structures of the larynx.

The *treatment* of chronic laryngeal disease may, with great propriety, be considered under two heads, to wit: *topical* and *general*. To Dr. H. Green belongs the credit of having first promulgated in this country the practicability of making local applications to the inner surface of the larynx. And although it is concluded by the Doctor himself that, in point of time, the discovery and application were first made by Drs. Trousseau and Belloc, yet Dr. Green claims to have made applications simultaneously in the same way, without knowing any thing of the publication of the work of those authors. Whatever the claims to priority, or whatever inventive skill is due to Dr. Green in this respect, I have no hesitation in awarding to that author the credit of having disseminated the knowledge of this important practical measure at an early period in the history of its discovery, and also of having manifested commendable zeal in its promulgation, in the face of incredulity, and of stout denial as to its practicability on the part of gentlemen high in the honors of the profession, who upon their professed minute anatomical knowledge, pronounced it a physical impossibility.

The most important local measure is unquestionably the application of a solution of the crystals of nitrate of silver. This should be made to the fauces, tonsils, and down into the pharynx, for some days previous to an attempt to introduce it into the larynx. Two or three considerations dictate this course: first, by making the application to these parts prior to entering the larynx, you in some measure deprive the whole throat of that peculiar sensitiveness which usually accompanies these cases, and also quiet any apprehensions which patients are apt to feel in view of any applications of the kind. At the same time you educate the muscular

organization of the throat to a more perfect expansion than is possible on the first effort.

It may be of some consequence to you to understand the particular mode of procedure in order to secure success in every instance. The application to the fauces can be made in almost any way; but the most convenient instrument for the purpose is a whalebone probang, with a much larger sponge fastened to the end of it than is used to enter the larynx. This is manufactured of all sizes by most makers of surgeons' instruments. The probang consists of a whalebone of the average size of a goosequill, but larger at one end than the other, with about three inches of the small extremity bent at an obtuse angle of about fifty degrees, and a small sponge firmly attached to the smaller extremity. The sponge being saturated with the solution, can be applied with the aid of a flat steel instrument about an inch wide, sufficiently thick to be firm, and bent at right angles with one end about eight inches long for a handle, and the other four inches long with a longitudinally oval portion cut out of the center, for the purpose of more firmly and steadily securing the tongue when necessary. This instrument, called the tongue-spatula, applied to the top of the tongue with sufficient force, will depress it far enough to bring the epiglottis into view, as it stands erect in the act of breathing. The probang used for the purpose of entering the larynx should have a sponge attached not larger than a common-sized kidney bean; when larger than that its introduction into the tube will often be difficult. But one three or four times as large is preferred for ordinary applications to the pharynx and fauces.

After the patient has been trained for a few days, by applying the larger sponge to the fauces and adjacent parts, and has become accustomed to a sufficient depression of the tongue, he should be seated before a door or window, for the purpose of allowing a complete view of the parts. The head may be held back by an assistant, but I prefer to have it rest on my knee, elevated by placing my foot in a chair immediately behind and of the same height with the one in which the patient sits. Depressing the tongue with the spatula just described, I introduce the sponge previously saturated with the solution. After opening the mouth and depressing the tongue, you will generally see the erect epiglottis upon the first movement of expiration, when the sponge should be passed above and beyond it, and slipped through the glottis into the larynx. The moment it enters the larynx, a spasm of the muscles

diminishes the caliber of the tube, grasps the sponge, and presses out the solution. It is not therefore necessary to allow the sponge to remain, but you should remove it immediately after it is introduced. In this way, a sufficient amount of the solution is pressed out to pass down over the adjacent mucous membrane not reached with the sponge. Some benefit no doubt, is derived from the mechanical swabbing of the part, as the tenacious mucus, covering it, is wiped off. These applications should be made every alternate or every third day, at first, and afterward once a week, or once in two weeks, as the case may require. [In some cases I have succeeded in introducing a sponge or tube through the glottis by the following maneuver, after failure by the plan above described. Insert a firm cork or a spool of thread between the molar teeth on the left side of the patient's mouth, so as to prop the mouth widely open, then pass the forefinger of your left hand over the right side of the base of the tongue, and with it raise and hold the epiglottis until the instrument is introduced. S.]

I have in numerous instances, derived great advantage from this application, in cases connected with bronchial consumption and affections of the trachea. Although it is not practicable to reach bronchial bifurcation with the sponge, yet sufficient of the solution may be thus introduced to exert a very salutary influence upon the disease there located. Great benefit may also be derived from a similar application to the posterior nares, with a probang bent at right angles, and introduced through the mouth, back of the soft palate, so as to wipe off the nasal floor.

The strength of the solution proper to be used is a matter of some interest, as all cases do not require, nor will they bear, the same solution. From forty to one hundred and twenty grains of the crystals, to an ounce of pure rain or distilled water, may be considered the two extremes proper for general use. Some rare cases will not probably bear even the first to begin with, and it is equally probably that here and there a case may be found which will require a stronger solution than the latter.

The *elongated uvula* usually found in this affection, if dependent upon mere relaxation, and presenting an edematous condition of the extremity, will generally be relieved by a few applications of nitrate of silver in substance, which should be followed the next day after each application, with a powder of burnt alum. But those cases presenting an indurated and greatly elongated appearance, will rarely be permanently benefited by any application short

of excision. This is a very simple operation, and void of danger in almost every case. It can readily be accomplished with the uvula scissors. These scissors, you are aware, have half an inch of the end of one blade bent at right angles, and when the uvula is within the blade it can not slip out, and can therefore be easily clipped off. Or it may be done with the common crooked scissors, after catching the end of the uvula with a pair of long forceps. I have not been in the practice of excising the entire uvula, but merely removing all that would be likely to be a source of irritation.

The same remarks will apply to the affections of the *tonsils*, which are often associated with the disease under consideration. In those cases of chronic enlargement of the tonsils met with in children, I have not usually advised the process of extirpation, even though the case indicated a scrofulous diathesis; but have believed it best to trust for a removal of these morbid deposits, to a change of diathesis consequent upon a regulation of the habits during the development of the physical system. But when these chronic enlargements are complicated with a cachetic state of the system and chronic affections of the larynx, you can rarely expect the case to be benefited by local applications, and as these complications may have an important influence in perpetuating the laryngeal disease, it will not answer to await the slow process of change of diathesis for their disposal. It may then be necessary to extirpate the tonsils, the method of which operation pertains to the department of surgery. Whether it were determined to extirpate the glands or not, I have generally advised some revulsive application to the back of the neck, as many of these laryngeal affections are connected with, if not produced by, irritation located in the roots of the spinal nerves. I have witnessed the most satisfactory results from a long-continued drain kept up at that point by the discharge from a caustic issue. It is a source of but little inconvenience, and should be continued for a number of weeks or months, if necessary. Or if there are any objections to the issue, the same indication can be fulfilled, only to a less extent, by the application of the irritating tar plaster over the cervical vertebræ.

I have thus far confined my remarks upon the treatment of this affection, to the consideration of purely local measures, regarding them as of the first importance for the suspension or removal of the exciting cause of the disease. Whatever efficiency may be anticipated or realized from these local measures, their effects must be transitory so long as the cause of the disease is allowed to remain

in operation. Here then, simultaneously with the local appliances just described, the cause should be at once attacked. If the patient is a public speaker or singer, his vocation or vocalization should at once be suspended, and his general health receive a full share of attention. If the local affection is associated with a sluggish state of the digestive organs, a coated tongue and no epigastric tenderness, it would be well to premise the administration of a gentle emetic. The acetous tincture of sanguinaria and lobelia, or the infusion of lobelia and boneset, as heretofore recommended, may be used for this purpose. In either case they should be administered till the desired action is produced, and it may be found desirable to repeat the emetic once or twice in the course of the treatment. But whether the emetic be administered or not, when there is inactivity of the digestive organs without irritation, and torpor of the bowels, the restorative gin bitters will prove a valuable adjuvant in giving tone to the digestive organs, regulating the action of the bowels, and thereby favoring, to a very important degree, general restoration. If the liver should be slow in its secretions, a small quantity of podophyllum may be added to the bitters, with a view to its cholagogue influence on that viscus; or the compound taraxacum pill may be given at the same time with the bitters, without the addition of the podophyllum.

But when indigestion is the principal and efficient cause of disease of the larynx, in which case a red tongue, epigastric tenderness and an excited pulse will be perceived, a very different course will be distinctly indicated, and will be indispensably necessary. In such case all stimulants must be strictly avoided, and the bowels kept open by appropriate diet, such as has been already recommended for habitual constipation, or by the use of lavements; or in any event by the mildest and most unirritating aperient. But *if possible* the diet and lavements, with as much exercise in the open air as the patient can bear, should be preferred to medicine. In these cases little or no medicine should be used, except those very mild and simple tonics which experience has fully shown give tone to the stomach, without in the least adding to or continuing the local irritation. The infusion of staphylea trifolia, as proved by experience, possesses these properties to a very satisfactory degree, and its administration will generally be followed, in all cases where there is a red tongue and epigastric tenderness, by a diminution of the symptoms. When torpor of the liver is complicated with gastric irritation, and the means already suggested, together with such

revulsive measures as have often heretofore been directed for a similar condition of these organs, have failed to restore a more free and healthy action of the hepatic functions, the compound taraxacum pill should be given, not as a purgative, but as a cholagogue. It may be thought that this remedy would be too active, or would add to the existing irritation of the mucous membrane of the stomach; but experience with it in many cases of a similar character amply disproves the suggestion.

In all these cases, a most important and efficient measure for giving tone to the general system is frequent bathing of the whole surface, as often heretofore recommended for chronic affections. It should be done at least once a day, over the entire surface, and followed or accompanied by brisk friction. The cold sponge or shower, or the tepid alkaline or whisky bath may be used, accordingly as either may appear to best suit the case.

The therapeutic and hygienic measures which I would advise for the treatment of those cases presenting undoubted evidence of a scrofulous condition of the system, will be fully described when I come to speak of tuberculous affections.

If in any case you should detect indications of any of those abuses of organic laws heretofore referred to, the patient should be enlightened on the subject, and earnestly exhorted to avoid the abuse, whatever it may be.

The character of the diet will depend upon the condition of the patient, and will probably require to be changed in the same case at different stages of the treatment. As a general rule, plain and substantial articles of food should be prescribed, with special cautions against eating too much. When there is irritation of the stomach, a more simple and less stimulating diet will be required than in other cases, and should be farinaceous and easy of digestion.

Exercise in the open air, to an extent proportioned to the ability of the patient, will be indispensable.

LECTURE XXXIX.

LOCAL DISEASES—CONTINUED.

Croup: General Remarks; Description of Croup; Three Modifications; 1, Spasmodic, Symptoms; 2, Inflammatory, Symptoms; 3, Pseudo-membranous, Symptoms; Cases Cited; Diagnosis; Anatomical Relations, Quotation from Dr. Meigs; Cases Cited; Quotations from Dr. Meigs and Dr. Wood.

CROUP, CYNANCHE TRACHEALIS, ANGINA TRACHEALIS, TRACHEITIS,
HIVES, OR BOLD HIVES.

These several terms have been used by different physicians and writers at different times to designate the same disease, and while the profession have been thus undetermined in relation to a significant appellation, the books do not exhibit much more agreement in regard to many leading points in its character and treatment. The most objectionable name, however, for this disease is *hives*, as that term has been appropriated by more general consent, to designate an ephemeral eruption frequently met with, an affection of a very different character known in the books by the name of *urticaria*, and therefore is improperly applied to a disease of the air-passage, and when so applied creates confusion. There is in fact no term now in use which, as applied to this affection, is either strictly expressive of its true character or fully indicative of its location. This is most apparent when you remember the different and frequently occurring modifications of the disease, and its complications with disorders of other parts. It is hence difficult to select any one term that shall at once indicate its locality and character. As however the disease in question is universally understood, both in and out of the profession, to be indicated by the conventional term—*croup*, I shall retain and employ that term, although it is etymologically expressive of nothing connected with the disease, and is entirely arbitrary, unless indeed you may perceive some resemblance between the sound of the word and the cough so characteristic of the disease.

Croup then, is an affection peculiar to childhood, rarely occur-

ring after, but liable to be developed at almost any time prior to, the period of puberty, and generally diminishing in the frequency of its attacks in proportion to the proximity of the child's age to the latter period. The always distressing and sometimes almost heart-rending scenes attendant upon its progress and especially upon its frequent fatality, have not and could not have failed to enlist the keenest sympathies of the warm-hearted and conscientious practitioner, and induce a most careful and patient investigation of the subject. Having early in my experience encountered many cases, which, in one of the modifications of the disease, up to a certain period of my practice, proved uniformly fatal in spite of any course of treatment known to the profession; a fatality, so far as I could ascertain, common to other physicians who came in contact with that particular form of disease; I was led to investigate the subject, both as to its nature and treatment, with more care and scrutiny than I have, perhaps, given to any other disease. I have without doubt profited greatly by these investigations into the phenomena and treatment of the disease, and perhaps you will permit me to say, in reference to my estimation of the value of the results obtained, that if I had but three years as the allotted limit of my professional career, and out of that time it was necessary for me to appropriate the full period of a term of medical lectures, with all the attendant labor and expense, for the purpose of acquiring the knowledge which I hope to impart to you on this subject, I should conceive myself amply rewarded by so doing.

I have already said that a diversity of opinion in regard to the character of croup prevails among the profession. Thus, most British authorities seem to recognize but one variety, and discuss the different modifications as if belonging to that variety, though they do also describe the spasmodic form, which they call spurious croup. With this view some of our American writers agree with wonderful coincidence, yet while they appear to recognize but one essential form, they manifestly have not failed to observe and describe the various phenomena, presented in the different conditions of the organs involved, though their symptomatology is lamentably confused. Many of our authors, on the other hand, and Dr. Wood among the number, make two varieties, which they call the catarrhal and pseudo-membranous. But the division made by Dr. J. F. Meigs, is the only one in my judgment that corresponds with the division of nature, and will stand the test of observation and

experience. At the same time, while I most fully agree with Dr. Meigs in this fundamental point, I am forced to dissent from his definition and character of the pseudo-membranous modification, which I shall more fully discuss hereafter.

This affection then, in a practical point of view, presents *three* distinct modifications which I will attempt to describe, namely: the spasmodic, answering to Dr. Wood's catarrhal, the inflammatory, answering to the simple or erythematous of Dr. Meigs, and the pseudo-membranous. I shall discuss them in the order here stated.

The *first* or *spasmodic* variety occurs mostly at night, generally late in the evening, but frequently before the older members of the family have retired, though it may no doubt occur at any time. In my experience, the first intimation of any indisposition, in most cases, is a sudden hoarse and ringing cough, frequently followed by the child's rising up in bed with a frightened and distressed appearance, the corners of the mouth being retracted, the eyes staring and projecting, and the patient apparently struggling for breath, which is at times partially interrupted by the effort to cough. For a few minutes the case exhibits indications of severe suffering without positive pain. In mild cases the spasmodic and perturbing symptoms gradually subside, without any other developments, and the little patient, becoming easy and quiet, drops into a gentle sleep, from which it awakes in the morning apparently free from disease with the exception of a slight hoarseness, the cough even having lost its characteristic sound.

But in more severe cases, after being roused up as before, the difficulty of breathing continues more or less for an hour or two, or even longer, aggravated at times, especially upon the recurrence of the cough. In some cases, the child complains of a slight irritation in the throat, keeping up an almost constant inclination to cough, which is suppressed as much as possible on account of the sense of suffocation which it produces. In all these cases the cough is always peculiarly rough, ringing, and dry, until the spasm begins to subside, when it is followed by a mucous secretion changing the cough to a moist or "rattle" sound. You will very often, on being called at night, perhaps just before, or shortly after you may have gone to bed, find your patient in this condition. These attacks are generally slight and last but a short time. Yet occasionally a case may prove suddenly fatal from the spasmodic action of the muscles of the larynx, and in such cases the patient

sinks into asphyxia from the continuous spasmodic constriction preventing the proper aëration of the blood so essential to life.

It will doubtless often happen to you, as it has to me, on being called to such cases, to find the little patient in its mother's lap, slightly oppressed but rapidly improving, and generally dropping to sleep by the time you have examined into the history and symptoms of the case. On waking up in the morning the child may not be entirely well, but will be so far improved as to require only a reasonable degree of care for its entire recovery without medication. Cases like this usually present a slight febrile state of the system, such as slightly increased heat and arterial action, which however, generally pass off with the other symptoms. But in other cases, though the patient is thus relieved for that time, and continues apparently well through the next day, yet he may be afflicted, on the second and third nights, with a return of the same symptoms, more or less aggravated, according to the care and prudence employed in treating the case. The symptoms may again subside and the patient be comparatively well on the second and third days. To precisely such cases I have been frequently called, and have often, perhaps I might say generally found that care in diet and freedom from exposure was all that was necessary for their successful treatment.

In other cases, you will detect a distinct periodical recurrence of symptoms which you will often find are dependent on malarial influence, and which will be promptly relieved by a course of medication adapted to that indication. In such cases, when I have found a recurrence of the symptoms, and was fully satisfied that the patient had been properly regarded in respect to diet and exposure, my rule has uniformly been to treat the case with antiperiodics. And as it is frequently difficult to determine whether the child has been prudently cared for, many parents thinking themselves careful when they are altogether otherwise, and as the course of medication indicated in such cases is safe and harmless, even though the disease may be kept up by local irritation, I have never hesitated to prescribe as in a case of well-defined periodical character. If the case pursues for one or two nights, the course before described, you will almost always detect a specific periodical influence or else the return of the symptoms has been superinduced by over-eating or exposure. And in this way it may be merged in, and develop all the symptoms of, the inflammatory variety. This

however, I apprehend is rare, as I have no recollection of a case of the kind occurring in my practice.

In some cases the stridulous or barking cough continues through the day, without any other symptoms, not even a hoarseness, or the ordinary evidences of a cold, except what is manifest in the frequently recurring cough, or there may be more or less hoarseness, and a slightly excited pulse through the day, though not sufficient to mark the case as one of much importance. In these cases the tongue will usually be coated, the bowels somewhat inactive, the thirst slightly increased, and the appetite, though generally as good as usual, may be impaired. But in most other respects the case will exhibit few symptoms of disease, and the child will be usually found playing about as in health.

Sometimes the local symptoms are more continuous, the attack is more persistent, general disturbance and the paroxysmal phenomena are more apparent, and the whole character of the disease presents more of the inflammatory modification than of the spasmodic.

The *second* variety, or *inflammatory* form of croup generally comes on in a very gradual manner, manifesting in the first instance the usual indications of a "cold." The first symptoms usually observed are a slight discharge from the nose, frequently accompanied by sneezing, suffusion of the eyes, slight hoarseness, and more or less general uneasiness, or perhaps moderate febrile action. These symptoms may continue gradually increasing for a number of days. The febrile action becomes more distinct with the extension of the irritation into the fauces, larynx and trachea, developing successively a sore throat and difficulty of swallowing, a remarkable hoarseness or suppression of voice, and finally the peculiar stridulous or hoarse and croupal cough, accompanied with a hurried and often difficult respiration. But sometimes this form of the disease develops more suddenly, and in such cases the symptoms of simple coryza may have existed for a day or two, when a distinct chill will be felt, which will be followed by a high grade of febrile symptoms, showing unequivocal evidences of rapid tracheal inflammation, and often manifesting all the phenomena of the other phlegmasial affections. In this state of the system the cough is more ringing and dry, the respiration more hurried and oppressed, the pulse is frequent and corded, the skin becomes dry and hot, the countenance flushed, and the face swoll-

en; the eyes often become prominent and suffused, the bowels torpid, and the urine scanty, with great restlessness and difficulty of breathing. And if the disease progresses, a more distinct obstruction in the respiratory functions becomes apparent, with a decline of the cough and increasing evidences of imperfect aëration of the blood, as shown in the purple lips and swollen feet and hands, blueness of the fingers and finger nails, tossing back of the head, and general uneasiness. In this condition, the symptoms all rapidly increase, and the little sufferer gradually sinks into a comatose condition, becomes exhausted and dies in a state of asphyxia, or possibly a violent fit of epileptic convulsions terminates the scene. More generally, however, an amelioration of the symptoms takes place at some stage of the disease, the cough becomes more loose, the respiration less hurried and oppressed, accompanied with a mucous râle, and thus all the symptoms gradually improve until the patient recovers. It also frequently happens, that the early successive symptoms of coryza, laryngitis, and croup gradually give way, while the inflammatory action is diffused over the bronchial mucous membrane with the attendant change of symptoms, and in its several stages, mucous secretion more or less free takes place, until the extensive surfaces of the bronchial tubes afford a more ample field for capillary engorgement, and thus weaken the phlogistic action, when nature with her wonderful recuperative energies comes to the rescue and relieves the case by an abundant secretion from the mucous surfaces involved.

But in some rare cases, the diffusive character of the inflammation does not stop with the bronchial mucous membrane, but passes on to the smaller air-passages of the lungs, and perhaps to the parenchymatous substance of those organs, and produces a well-defined case, with all the general and local phenomena, of pneumonia proper. In this event the successive symptoms of catarrh, croup, and bronchial irritation gradually give way, and the case is entirely metamorphosed, so that no suspicion would be had, at this stage, that any other symptoms had existed; and indeed, in a practical point of view, it does not matter.

Upon examining the fauces in this form of croup, I have uniformly found appearances of inflammatory action, though generally the fauces present a more pale red appearance than is characteristic of active inflammation. I have in a number of instances witnessed patches of a pseudo-membranous formation presenting a whitish

appearanee, and evidently composed of coagulated mucus, or coagulable lymph, or perhaps it was the mere deadened epithelium, as we often see it in thrush or "nurse's sore mouth," but differing essentially from the yellowish albuminous formation which is seen in the pseudo-membranous variety.

The *third* or *pseudo-membranous* variety of croup, though more rarely met with than either of the other forms, and much more so than the spasmodic, occurs sufficiently often to admit of very thorough investigation into its character and phenomena. Such an investigation I was led to make from the uniform and distressing fatality attending the usual mode of treatment recommended by the authorities, a fatality which impelled me, some six or seven years since, to abandon the mode in total despair, and to commence examining more thoroughly into the true nature of the disease, and searching for a more appropriate course of medication than had been recommended or tried, so far as I could determine. My examination was rewarded by hitting upon measures which proved successful in the first case in which they were tested, and which I have since pursued with entire success in the treatment of seven or eight cases of the most marked and unmistakable character.

In almost every case that has come under my observation, the first manifestation of the disease has been in the larynx, and most probably also in the trachea, commencing with a slight hoarseness, without showing at first any other abnormal action in any of the functions of the system. This hoarseness, however, very soon increases, as shown in the slightly stridulous sound of the voice and breath and the croupal cough. As the exudation increases, and the size of the laryngeal passage diminishes, the sound of the respiration becomes more tight, stridulous or oppressed, while the cough becomes more stridulous or wheezing, and very soon the articulation sinks to a whisper. As the respiration becomes more obstructed, the cough occurs less frequently, and when the effort is made, exhibits a mere wheezing or slightly whistling sound. Thus the case progresses, exhibiting no other organic or functional disturbance of the body, until the air-passages are so far physically obstructed as, with the spasmodic action,—more or less apparent in the whole progress of the disease, and indicated by occasional periods of greater difficulty of breathing,—to prevent the ingress of air into the lungs in sufficient quantities to supply an amount of oxygen indispensable for the proper aëration of the blood, with-

out which the vital fluid becomes loaded with carbonaceous elements, and thereby unfit for the healthful purposes of the vital economy. The patient soon sinks into a profound coma, perfectly asphyxiated as when submerged in water or confined to a vault of fixed air.

I, by no means, suppose that the commencement of this form of croup is necessarily confined to the larynx and trachea; for, although I have never observed it, yet I have no doubt it may first start in the fauces, and gradually extend into the larynx. It would seem however, to have its origin more frequently, if not universally, at the point where it spends its force. To admit its occasional starting-point from other places, does not in the least compromise my views of the peculiarities of the disease.

Those who are unacquainted with the true nature and phenomena of this form of croup, rarely or never suspect its insidious approach, and hence in most cases the obstruction becomes imminent, and the symptoms plain and unmistakable, before any treatment is considered necessary. But when families have become familiar with the disease, the first approach will be observed, and thus an opportunity afforded for careful observation from the first to the last stage. Such has been my advantage in a few cases. In one instance in particular, where the family had been cognizant of a case in the neighborhood not long before, the approach of the disease was suspected at a very early period, and I was sent for while as yet the sole evidence of improper action in any part of the system, could be recognized only by the child's cough, and by listening, in a still room, with the ear placed within a few inches of the child's neck. Then I could hear the peculiar but indescribable strictured sound of the laryngeal respiration, which, however, at the distance of a few feet was wholly inaudible. This local obstruction was, in this and all the other cases, at this stage, and in fact to a much later period, the only evidence of disturbance any where to be discovered. The child was playing about as usual, lively, shy, and apparently well; his pulse quiet, skin cool, bowels regular, appetite good, and so far as I could learn or judge, aside from the local difficulty, no one function of the body specially disturbed—the insidious disorder being too slight and limited in its extent and influence to excite the action of the sympathizing organs. The rest of the system does not ordinarily show any abnormal disturbance until after the perturbing influence of a deficient aëration of the blood is developed.

It may not be out of place to describe, by way of illustration, another case which came under my observation. Casually meeting the mother of the patient standing at the gate as I was passing the house of an old patron, I stopped to make the usual inquiries after the health of the family and then started on; but had proceeded only a few steps when the mother bethought herself to have me look at her child, who was, she said, "not sick, but not very well." On going in I found the child sitting up in his "crib," eating a slice of bread and butter with an apparently quite healthy relish. The mother had not suspected the approach or presence of any important derangement. The skin was cool, pulse very little, if any excited, and the general appearances indicative of perfect health. But I instantly observed the oppressed breathing, and the rather more than ordinary dark red or purple appearance of the face; the unerring indications of an increasing want of air in the lungs. The child was between three and four years of age and a very healthy boy. I learned that this difficulty of breathing had been very gradually but steadily increasing for about four or five days. The mother was amazed and confounded when I informed her that there was no chance for her child to get well, and although he was treated with the most efficient means known to myself or, as I supposed, to the profession, he died within eight hours from that time.

The strictured sound of respiration will be heard in the early stage, only during *inspiration*; but as the obstruction increases and the difficulty of breathing becomes more apparent, the same tight and oppressed sound will be heard in the act of expiration as well as of inspiration. As the obstruction becomes more complete, and especially if the case has been protracted, the expiratory sound is occasionally associated, during the strongest efforts, with a kind of fluttering sound, as though the lower extremity of the membrane had become detached and was lying loose, and yielded the sound by the action of the breath upon it. That this is the true explanation of the phenomenon, was confirmed to my mind by the post-mortem appearances in a case where this peculiar sound was recognized. It is stated by the authorities, that the entire membrane, in the form of a complete tube, has been in several instances thrown off by vomiting or severe coughing. I have in some cases, upon post-mortem investigation, found it detached in several places though still entire, and in one case of a very protracted character,

though ultimately proving fatal, I found it remaining in patches, the other parts having been softened up and discharged.

As before intimated, I never met with a case of indisputable membranous croup, which exhibited any marks of general or constitutional disturbance until after the local obstruction had affected the blood, and thereby brought the rest of the system into sympathetic relation. But at a late stage of the case I have found an excited, but generally small, and frequently irregular pulse, with perhaps considerable warmth, or an undue heat of the skin on the body, while the extremities have been below the natural standard, and the rest of the general symptoms have corresponded with the perturbation produced by the obstruction and by its influence on the blood. In this stage the little sufferer always becomes extremely restless and uneasy, often changing its position, going from its mother to the nurse, from her to some one else or back to its mother, or perhaps onto the bed or into the crib, first lying up over the shoulder and down again on the lap, with its head thrown back, intimating its desires only by its movements, looks or motions, as the voice is perfectly muffled or entirely suppressed; the circulation meantime showing increased evidence of carbonaceous accumulations and producing a state of venous congestion, which is soon followed by drowsiness, and finally by a comatose condition and death.

When, consequent upon appropriate treatment, patients have recovered in my hands, although the case was far progressed, the only favorable change I have been able to notice for the first twelve or twenty-four hours has been that the symptoms of local obstruction did not increase. In a day or two there would be a slight improvement in the respiratory effort and a more quiet state of the patient. But as the case went on improving from day to day for a number of days, the respiration became more free though occasionally rattling, and upon the occurrence of cough there would be a distinct clatter, and presently a discharge of a small portion of the detached membranous formation, and thus through the action of the absorbents and the efforts at coughing, the accidental formation would be very gradually disposed of, or although it never occurred in any of my patients, it may be discharged whole, presenting a complete tube. In either case the relief of the patient would be immediate and the recovery rapid.

Thus have I endeavored to give you a short and concise view of the symptoms of each modification of croup as I have often recog-

nized them in my own experience. I have endeavored also to abstract myself from all authority and reflect upon your minds the impress that nature has made upon mine. Where experience is our guide, it becomes us correctly to reflect that experience, and when it differs from the records of others you are at liberty to make your own inferences, and test the truth or falsity of the respective doctrines upon your own responsibility.

For the purpose of placing the different modifications of this disease more distinctly before you I shall next consider the

Diagnosis.—The striking characteristics of the spasmodic form are, the suddenness of its occurrence; the ephemeral nature of its existence; the period at which it generally occurs; the absence of any considerable constitutional excitement, and the distinct spasmodic or paroxysmal character it assumes.

The inflammatory form is far more gradual in its approach; is associated with well-defined symptoms of a “cold” and catarrh, develops at an early period unquestionable inflammatory appearances, with all the ordinary symptoms of general and constitutional derangement, and is liable to produce inflammation of contiguous structures.

The pseudo-membranous form is marked by the *absence* of constitutional disturbance and evidences of inflammatory action; by a persistent, unabated and uniform stricture sound of the laryngeal respiration, which varies only by being slightly increased upon any exertion; by an early loss of voice, and the change of cough from the proper croupal sound to a mere wheeze, or suppressed whistle, or muffled sound.

Dr. Meigs says the spasmodic form “begins with coryza and hoarseness; or *more frequently* by a sudden attack of suffocation in the night; fauces natural, or merely slight redness as in simple angina. After the paroxysm the child seems well, the fever disappears or is very slight; voice natural, or only slightly hoarse, not whispering. If the paroxysm returns, it is during the following night, and is less severe; the hoarseness disappears; the cough becomes loose and catarrhal. Duration seldom more than three days.”

In his diagnosis of the inflammatory form, Dr. Meigs remarks: “Though the diagnosis is difficult, it can generally be made out with considerable certainty by attention to the following points: the pseudo-membranous form of the disease is often preceded or accompanied by the presence of false membranes in the fauces,

which is not the case in simple laryngitis; the symptoms of invasion of the former disease are less acute than those of the latter, the fever being less violent, and the restlessness and irritability less marked than is usual in the simple affection, in which the *general symptoms* are severe from the first. The hoarseness of the voice and the cough follow a different course in the two diseases; the progress of these symptoms being slow and gradual in the membranous, and much more rapid in the simple form. The fever is violent throughout the attack in the simple inflammatory disease, while in the other form it seldom reaches a high degree of intensity; and again, in the pseudo-membranous kind, the dyspnœa and suffocation increase; the voice and cough are smothered or extinguished; stridulous respiration persists."

The *anatomical* relations of the different modifications of croup, are not less striking and distinctive than the symptoms exhibited in the progress of the several forms. Never having lost a case of the spasmodic form, and therefore having had no convenient opportunity for its investigation, I rely upon the autopsy of others. M. Valleix, as quoted by Dr. Meigs, says that "the accounts of the anatomical lesions are vague, and that these are generally stated to be very slight. A little mucus and slight redness have been observed in some cases, but authors have generally been satisfied with stating the larynx to be free *from alteration*." This statement would accord with the phenomena of the disease during its existence, and I take it therefore, that the nature of spasmodic croup, is a mere irritation of the mucous membrane reflected upon the muscles of the larynx, and not amounting to any inflammatory action, or it would necessarily in this condition, develop the *phenomena* of inflammation, and thereby present a more persistent disease, as we find in the inflammatory form.

I have made post-mortem inspections of but one or two cases of the inflammatory variety. In these cases, that precise state of the parts was found to exist which the phenomena of the disease during life would naturally suggest. These were vascular engorgement of the mucous, submucous and cellular membranes, and the destruction of the epithelial covering in patches, leaving the surface in those parts granulated in appearance, and greatly varying in color from a pale rose to a dark mahogany. In one case, slight ulceration of the mucous membrane was observed, and the cellular structure was found infiltrated with a puriform secretion, though the history of the case clearly determined the former appearance

to have been associated with a chronic affection of the throat. Other complications were found, which however were in no wise pathognomonic of the laryngeal affection.

Says Dr. Meigs; "The anatomical alterations may consist of simple inflammation of the mucous membranes, with its *various effects*, or of the same changes in connection with ulceration. The latter class of lesions is almost always confined to secondary cases. In the former class (acute) the mucous membrane varies in color between a deep rose and a violet red, which may be either uniform or only in patches. In severer cases the tissue is at the same time softened, or roughened, and sometimes thickened. When redness, softening and thickening are present, the disease is generally confined to certain parts, and usually to the epiglottis and internal portions of the vocal cords; but when redness alone exists, it generally affects the whole of the larynx, and sometimes extends to the trachea."

In describing the anatomical relations of the pseudo-membranous form, I am prepared to speak from more extensive personal observation, as I have made post-mortem examinations of most of the cases which have proved fatal in my practice. In *all* these, I found so striking a similarity in the appearance of all the structures liable to be involved, and the morbid alterations so nearly corresponded with the phenomena of the disease during life, that it was difficult to avoid the conclusion, that the coincidence was not accidental, but bore the relation of cause and effect. I may here be permitted to say, that this conclusion was not one which I sought, but was the result of observations made at a time when, so far as I was aware, the only view of the associated conditions that had been entertained or had ever been promulgated was, that croup was an active inflammatory affection. The pseudo-membranous formations presented somewhat different appearances in several of the cases which I examined, which were plainly referable however, to the difference in the length of time which the formations had existed. In one case, that lingered for twelve days with alternate prospects of favorable and fatal termination, the membrane had softened up and been discharged in patches, leaving the larynx and trachea covered in spots with this inspissated exudation adhering to the mucous membrane, while the remaining portions were in very different stages of softening, and adhered with different degrees of tenacity. The appearance of the artificial formation was about the same in color and character, though not as thick, as

some others that I have examined when they were entire. The mucous membrane exhibited a slightly rugous appearance in places, but the whole surface presented a more loose or relaxed condition than natural, moderately roughened, the color slightly increased, though in some places it was decidedly paler than natural or blanched, with no mucous or purulent infiltration or swelling in the submucous or cellular structure. This is a fair representation of this case, and however humiliating or painful the reflection, I have since been forcibly impressed with the conviction that the fatal result of the case was in part owing to the heroic and perturbing measures, which the inflammatory view of the disease impelled me to use for its removal.

Another case, terminating fatally in about six days, presented the entire larynx and upper half of the trachea perfectly lined with a membranous formation, as thick as two average-sized wafers, adhering to the mucous membrane by fine filamentous, thread-like substances, which was removed in the entire state. The mucous membrane exhibited a clean but slightly changed color and abraded appearance. The adjacent structures were very little altered. In another case, the attendant circumstances after using every means which experience could suggest without any benefit, seemed to justify a trial of tracheotomy. In performing the operation, I was successful in drawing away the membranous formation, and there were sanguine anticipations of final recovery, but inflammation supervened and the case terminated fatally. The post-mortem appearances indicated inflammatory action without the pseudo-membranous formation. I repeat, that in these and other cases which I attended and afterward examined, there were no evidences of constitutional disturbance in the progress of the disease until after the system had begun to feel the influence of deficient aëration of the blood, and the morbid appearances indicated no more inflammatory action than I have described.

I propose now to read to you one or two extracts from the books, by way of confirming the correctness of my observations in this form of the disease. Dr. Meigs says, "the false membrane is generally of a yellowish white color, and from a fifth of a line to a line in thickness. Its consistence is generally considerable, and it is usually somewhat elastic. The free surface is usually covered with puriform mucus, while the inner surface is adherent with various degrees of force to the mucous membrane beneath. * *

* * The mucous membrane presents various shades of redness,

or is violet colored, or even blackish. In other cases it retains its normal characters—a circumstance which has given rise to the opinion entertained by some persons that the disease is not inflammatory, though it is altogether probable that this condition is consecutive to the formation of the exudation.”

Here I would ask, where are the symptoms of inflammatory action prior to the exudation, if that occurrence relieves it? All the cases that came under my observation, had no febrile symptoms and no indications of any inflammatory action, until after there were unequivocal evidences that extensive exudation had taken place, and the subsequent post-mortem investigations confirmed this opinion.

Dr. Wood says: “Where the deposit is removed, the mucous membrane beneath it, though sometimes quite healthy in appearance and seldom exhibiting the marks of severe inflammation, is commonly reddened, either partially or generally; and the red points or streaks correspond with those upon the separated surface of the false membrane.” How does this correspond with the description which the same author gives of the appearances, on dissection, of the inflammatory modification of croup? “Dissection,” says Dr. W., “exhibits redness of the mucous membrane of the larynx, trachea and bronchia, either in patches or continuous, with occasional swelling of the submucous tissue from inflammatory infiltration.” But if exudation and the formation of this deciduous deposit can exist in one or a number of cases without the existence of inflammatory action, is it not fair to infer that they may universally occur independent of that condition, and that the sanguineous engorgement found to exist in only a portion of the cases was a mere accidental attendant, having, as has been demonstrated in some cases, no necessary connection with the existence of the membranous concretion?

You will see however, the points of agreement in our observations; and here I leave the subject, to be resumed in my next lecture.

LECTURE XL.

LOCAL DISEASES—CONTINUED.

Croup Continued: Peculiar views explained; Causes of Croup; Prognosis; Treatment; Of spasmodic Croup; Of the inflammatory form; Of pseudo-membranous; Cases cited; Strictures on certain modes of treatment.

CROUP—Continued.

Your attention was called in my last lecture to the consideration of the symptoms and anatomical relations of the different modifications of croup. In the present lecture I propose to pursue the same general course and discuss each variety in succession and in the order thus far followed. You will have observed however, that my view of some of the peculiarities of this disease differs in some points, from that usually set forth in the books; and before entering upon the further discussion of the general subject, it may be thought incumbent upon me to present a more full explanation of the grounds of this difference, and a further exposition of my views of the distinctive character, or peculiar features of the different modifications.

I therefore now address myself to that topic, and have first to remark, that I was led early in my practice, by the truthful presentations of nature, primarily to suspect, and afterward to dissent from, the pathology of the books. I have heretofore intimated the particular motive which impelled me to this course, and I now add, that for several years after I had observed and pointed out the characteristics which I have set forth in the last lecture, no publication fell in my way which approximated nearer to my views, than Dr. Wood's chapter on this subject in this Theory and Practice. And it was not until within a year or two past, that the work of any author whose observations nearly correspond with my own, came under my notice. I take pleasure in saying that to Dr. J. F. Meigs, of Philadelphia, so far as I am informed, is due the credit of having accurately distinguished and correctly described the different modifications of croup. It is always grati-

lying to find the results of one's investigations corroborated by an author of Dr. Meigs' scientific attainments. There are however, some points of disagreement between us, points of more or less importance, and to which I desire to call your attention.

And first, in regard to spasmodic croup: I am inclined to think that the difference in our views is perhaps more apparent than real, and probably grows out of the different shades of meaning which we attach to the term inflammation. It can not be denied that there is a great practical difference between the terms irritation and inflammation. And as the symptoms considered characteristic of inflammation have uniformly been wanting in this form of the disease, I can not find occasion for thinking that it should be so denominated, more especially as the whole character of the disease conclusively points to a high grade of irritation, which may indeed, in some cases, come little short of actual inflammation. This distinction is rendered the more necessary, when this modification is placed alongside of the inflammatory form, of which not only the symptoms during life, but especially the anatomical phenomena most clearly settle the character. I may say then, that the term *irritation*, if understood as indicating a diseased condition, varying in intensity from slight abnormal disturbance to a high grade of irritative action of the mucous membrane, which is reflected upon the muscular structure of the larynx, and thus produces "violent spasmodic action of that organ," will express my idea of the nature of the difficulty as nearly as our present knowledge of the disease will permit.

A wider and more radical difference in our views however, is entertained in regard to the nature of the pseudo-membranous variety; a difference in my judgment of a most momentous character, upon the determination of which, if experience has correctly taught me, the lives of vast numbers of the human family depend. Is pseudo-membranous croup inflammatory? That is the great question, the negative of which I take without hesitation, and appeal to the whole phenomena of the disease to support my position. If I am not mistaken, Dr. Meigs takes the affirmative, and apparently regards it as inflammatory without seeming to remember or reflect that he finds another modification presenting the phenomena of acute inflammation. The question is pertinent, why, if it is inflammatory, does a membranous exudation occur in this form, and not in that which is admitted to be inflammatory, yet in which this peculiar formation has never been found?

And why is there a total absence of any indication of the existence of inflammatory action, both in the symptoms developed during life and in the appearances upon dissection? I take it therefore that the true condition can not be that of inflammation, but a high grade of irritation, confined to the capillary vessels in contact with the basement membrane and epithelial surface of the mucous membrane. And the pseudo-membrane does not result from a natural secretion of mucus, nor from the effusion of coagulable lymph, such as commonly flows from inflamed surfaces and forms the uniting medium between opposing surfaces of serous membranes. But it is an exudate of albumen through the relaxed, irritated and engorged capillary vessels, which ordinarily contribute to the growth of the epithelial cells, so rapidly reproduced, when removed by absorption, in cases of chronic disease of such surfaces. This conclusion is supported by the following facts:

1st. The pseudo-membrane can not be coagulable lymph, because the most careful microscopic observations have not detected that peculiar organization in the structure of the former which is always present in the latter, when thus concrete; and moreover, the color of the former materially differs from coagulated lymph.

2d. The exudation of a large amount of albumen is rendered possible, and more probable than that of any other element similar to it, or capable of forming the structure in question, from the fact that this form of croup generally occurs at the time of life, when the transition state of the system requires a change from the lacteous to the predominating use of vegetable food, which abounds in albuminous matter, and furnishes the material for the formation of fibrin.

3d. The absence of any evidence of inflammatory action in the substance of the mucous membrane, is shown by the absence of the swelling and infiltration which would be likely to be found, if inflammation had existed in the deep-seated structure of this membrane, while a manifest irritation is presented in the vessels on its surface, and is indicated by the condition of the circulating vessels in the areolar tissue with which the basement membrane lies in contact.

4th. The conclusion is supported by the absence of any albuminous formation in any part of the system where inflammatory action is generally admitted to exist, and,

5th. By the existence of albumen in a peculiar disease of the

kidneys, where the disease presents no inflammatory symptoms, and is generally admitted to be of a non-inflammatory character.

These are the main considerations which go to sustain my view of the nature of the disease, and I think they find strong confirmation in the philosophy of its predisposing cause. I have never yet met with a case of membranous croup in a nursing child. While the system is undergoing the elemental transition, necessarily attendant upon the change from the lacteous diet to the use of food largely abounding in albumen, such as wheat bread, which is the predominating article of food of most children, it is very clear that albumen would be found in the blood in comparatively greater proportions than in after life. At this period, a slight attack of cold, not sufficient to produce active inflammation, but competent to excite irritation in the superficial vessels of the mucous membrane, will result in relaxation of the coats of the vessels, and an exudation of that element of the blood, most likely and best adapted to percolate through the relaxed tissues of the vessels involved, takes place very slowly, and thus becomes concrete by the evaporation of its watery portion from the constant passing of rarified air over it, or in part perhaps by absorption. As long as the irritation continues, the exudation will be found to increase, and thus add to the obstruction and difficulty of breathing.

In concluding this discussion, I will add, that if I have correctly apprehended Dr. Meigs' description of the pseudo-membranous modification of croup, I am forcibly impressed with the conviction, that when that learned author shall have critically reviewed his observations, and carefully reëxamined the phenomena presented by that variety, his views will more perfectly harmonize with those which I have thus endeavored to present. As it is, he certainly deserves the credit of having departed from the beaten track, and of having done much to clear up the confusion which existed by systematizing the mass of facts which had been observed; for you will hardly have failed to notice that there is no little confusion in most of the books on this subject. True, all the phenomena have been very correctly observed and reported by most writers, but without making the proper distinctions, and assigning the several symptoms to their proper modifications. And thus it has happened, doubtless, that different authors, following the lead of their predecessors, have taken it for granted that *croup* was CROUP—an

unfortunate assumption, for, involving as it did an indiscriminating symptomatology, it has led in thousands of cases to an equally indiscriminating, inappropriate and fatal mode of treatment.

Causes. The generally admitted exciting cause of every modification of croup is atmospheric vicissitude, or the application of irritating substances to the mucous membrane of the larynx and trachea; yet it must be conceded that something more than a mere change in temperature is necessary to be considered in searching for the cause of the disease, for it is well known that it will prevail in particular localities while other places equally subject to thermometric changes are free from it; and it is also known that it sometimes prevails to an extent sufficient to give it the character of an endemic in locations where atmospheric changes are neither extreme nor very sudden. This peculiarity can be accounted for by the fact, that the barometrical state of the atmosphere has quite as much influence in producing croup as the thermometrical; or in common parlance, a moist atmosphere is equally as efficient a cause as sudden changes. Hence we find that croup is one of the most common diseases in Great Britain, in the cities of New York and Philadelphia, and in other places bordering on or surrounded by large bodies of water, where the atmosphere is constantly more or less charged with watery vapor. We find the disease also occurring generally during those seasons of wet and changeable weather peculiar to the spring and fall.

Among the *predisposing* causes, hereditary predisposition is one which has great influence. This is often verified in a remarkable manner by the occurrence of croup in particular families, when neighboring families under apparently precisely similar circumstances, show no tendency to it. In such cases, I have often been able to trace back the predisposition in a family for a number of generations. But among these causes no one is so universal as that growing out of age. It is proverbial that croup is peculiar to childhood. This is unquestionably true as a general rule, yet it is difficult to see why the larynx and trachea of an adult may not also be the seat of active inflammation. And it seems that the predisposing influence of age, whatever that may be, is more especially confined to certain modifications of the disease. Thus, as I have before remarked, I have never yet met with a well-defined and unquestionable case of membranous croup in a child under one and a half or two years of age, or in a nursing child, owing, as I have already explained, to the absence of any excess of albu-

men in its nourishment. So also the spasmodic form has rarely been found to occur in very young children, though it is by no means so exclusively confined to a later period as the pseudo-membranous; while the inflammatory variety has been more commonly observed in young children before they are weaned, though this also is by no means so exclusively limited to that period, as the pseudo-membranous is to the period after weaning.

It may be asked, what is the peculiar condition of the system at this age which renders it susceptible to the influences supposed to be immediately productive of croup? The general explanation, and probably the only reasonable one that can be offered, is found in the anatomical relations of the parts involved at different periods of life. The vocal organs are very well known to undergo a change, corresponding in some respects to the modifications of the voice which take place at about the age of puberty. This physiological change, is no doubt partly owing to the development of the vocal apparatus, which, by increasing the size, lessens its susceptibility to obstruction. Yet when we consider what an immense change of the voice can be produced, by the slightest elongation of the vocal cords, it is difficult to believe that the mere enlargement is the only circumstance influencing exemptions from this affection. I have therefore little doubt, that the great susceptibility to morbid impressions, which is peculiarly characteristic of infancy, has much to do in the more frequent development of this disease, as it undoubtedly has in many other disorders.

Sex also is supposed to have some influence in the production of croup, as its occurrence has been more frequently observed among males than females; but why males are more susceptible it is difficult to determine, unless the greater nervous excitability characteristic of females in after life, is equally so at this earlier period.

Epidemic influences no doubt have an important agency in the production of croup, and especially when the prevailing epidemic tends to involve the respiratory organs. So also other diseases, involving the mucous membrane of the fauces and air-passages, are liable to become complicated with croup, such as measles, whooping-cough and scarlet fever, a few instances of which I have met in my own practice.

Prognosis. There is no disease the results of which so depend upon its modifications as croup. Thus, while perhaps not one in five hundred cases of the spasmodic form would prove fatal under

appropriate treatment, or possibly no treatment at all aside from proper care in diet, etc., not one-fourth, nor scarcely a tenth of the genuine pseudo-membranous variety have heretofore been relieved. Up to the period when I radically changed the course of medication in my practice, I do not recollect a case out of eight or ten of unmistakable membranous croup that ever recovered. But since that period, in my own practice and that of my partners, we have treated six or seven most unequivocal cases of the genuine pseudo-membranous modification of this disease, and not one of them proved fatal. I scarcely dare hope that future experience will be followed by such pleasing results; but I dare assure you, gentlemen, with the most undoubting faith, that that mode of treatment, if perseveringly applied, will insure a degree of success far more gratifying than has hitherto been realized from any treatment which I have seen or heard recommended.

Treatment.—That there are distinct modifications of croup, is most clearly shown by the fact, that different and distinct modes are required for their appropriate and successful treatment. Without a clear recognition of the distinctions which I have endeavored to point out, I should feel, and have felt, completely confused by the subjunctive qualifications which necessarily attach to every remedy heretofore prescribed, or which might be thought appropriate. But when we accurately distinguish the presence of either modification, we have every reason to suppose that its character will not essentially vary, and that the leading indications will continue the same throughout its whole course. Thus, if you are called to see a case of croup occurring suddenly, without much if any premonition, and showing but little constitutional disturbance, the indication throughout the attack is to arrest the irritation and thereby relieve the spasmodic action of the larynx. A large majority of such cases however, will slowly subside without any treatment, and if proper care is used on the following day, will not reappear the second night. Such has been my experience with one of my own children, who was peculiarly subject to this form of the disease, and up to his eighth year had perhaps not less than twenty attacks. In almost every instance, the attack occurring in the night, I would take him into my arms, place his feet and limbs in contact with my own system, and, applying the palmar surface of my hand over the anterior part of the throat, thereby covering the whole larynx and trachea, hold it until a burning sensation was felt in the hand. Before the hand was removed a gentle moisture

would appear upon the surface, and the child, usually soon dropping to sleep, would continue quiet until morning. On awaking he generally had a loose but slightly stridulous cough, and all that was then necessary, was merely to keep him throughout the day in a room of uniform temperature, restrict him to a diet of rice or crackers and tea, and use an injection if his bowels required it. In domestic practice, a very popular remedy is a mixture of New Orleans molasses and goose oil or lard, warmed sufficiently to mix well, and given in dessertspoonful doses. I have known this to be used in many families with entire success. I have not supposed it possessed very efficient properties, but as it took the place of what might otherwise have been not so harmless, drug treatment, I have rather encouraged its use, with the qualification that it should not be relied upon if the patient were not soon found improving.

But more obstinate cases, presenting symptoms of a more severe character, will require the use of less doubtful means. The acetous tincture of sanguinaria and lobelia, either previously prepared as a tincture, or made off-hand by steeping for a few minutes two drachms of each in half a gill of vinegar, then straining and adding loaf sugar sufficient to make a sirup, given in teaspoonful doses to a child two years old, varying the dose according to its effect and the age of the child, and repeated every hour or half hour, or not so often if the symptoms are not urgent, will be found very efficient in relieving the irritation and removing the spasm. After its relaxing and antispasmodic influence is realized and the cough becomes loose, the dose may be increased with a view of producing its emetic action; or the acetous tincture, diluted with water and only slightly sweetened, may be given in suitable doses, and repeated every ten or fifteen minutes, until free vomiting is produced. After a few hours the vomiting may be repeated if necessary, but meantime the sirup before directed should be continued with a view to its expectorant and antispasmodic influence upon the system. While these remedies are exerting their influence, they should be assisted by the local application to the anterior part of the throat, of a small hop bag wrung out of hot whisky or vinegar as warm as the patient will bear it, changed every half hour, and covered with a dry flannel to prevent a too rapid evolution of heat, with consequent chilly sensations.

In very obstinate cases, it may be necessary to resort to an active

and speedy cathartic; this will be more particularly indicated if the bowels are found loaded with morbid accumulations. When a speedy action is desired, an infusion of the antibilious physic, say two drachms to a teacupful of hot water, strained and sweetened, may be given in spoonful doses every hour, to a child two years old, until a free action is produced. I have also found in several cases, that the powerfully antiphlogistic influence of podophyllin and leptandrin, given every hour in doses of one-sixth of a grain of the former and one-half grain of the latter, answered all the purposes of the expectorant sirup and physic. This should be continued until its free cholagogue and cathartic effects are produced, or a cathartic dose of castor oil may be given. Or as an emetic a decoction of lobelia and eupatorium, frequently recommended heretofore, may be given in one or two teaspoonful doses, every ten minutes, until free emesis follows.

When called to cases in which very alarming symptoms do not press upon you the necessity of immediate and efficient measures, it is best to observe the case carefully, and wait at least until a full history of it can be obtained, by which time you will often be agreeably disappointed to see your patient drop into a gentle sleep, breathing quietly and calmly, and afterward recovering without any medicine. It might be well in such cases, in order if necessary to satisfy the anxiety of friends, to direct the application of the fomentations before advised. It is always important to avoid the administration of medicine if it is possible; but it is more especially advisable in the case of young children when there is a reasonable prospect of their recovery, and this it is your duty to watch with great care and circumspection. If after the first paroxysm is relieved with or without medicine, and the proper care has been used, both as regards exposure and diet, a recurrence of a similar attack takes place, I have for many years been in the habit of regarding such cases as modifications of malarial disease, or at least as essentially influenced by the miasma so prevalent in almost every section of our western valleys. In these cases, whatever may be thought advisable for the relief of the second paroxysm, I never hesitate, immediately after the urgent symptoms have been relieved, to commence the administration of antiperiodic medicines in liberal doses, with a view to prevent the recurrence of a third attack.

The inflammatory modification of croup, when fully developed, presents a condition of the system indicative of more prompt and

efficient action than is advisable or necessary in the spasmodic form, and it will scarcely be safe to await the uncertain and doubtful influence of local applications, however beneficial in connection with other more efficient measures, as by so doing you may jeopard the life of your patient. The indications to be fulfilled in this form, are to equalize the circulation and thereby subdue the local inflammatory action producing the obstruction. Cases of this form present evidences of more general derangement; such as a white and thickly coated tongue, high febrile symptoms, and all the appearances of extensive local inflammation, causing serious obstruction in the trachea and larynx. It is very true, that different cases present different degrees of violence, and as a matter of course will require modes of treatment varying in efficiency and activity. It will generally be necessary to commence with a gentle emetic for the purpose of removing any accumulations in the stomach, the presence of which is generally indicated by the appearance of the tongue, and thereby prepare the system for the better effect of the subsequent measures, and also for the purpose of exercising an important influence upon the general circulation. I have often found better and more lasting effects from the action of the emetic by premising for an hour or two the administration of nauseating doses, such as the sirup of sanguinaria and lobelia as directed for the spasmodic form, until a slight impression upon the respiration and mucous secretion is discovered, and then increase the dose, or give the infusion of lobelia and eupatorium until it operates freely. I have given in a number of cases, to children eight or ten months old, one or two drops of the fluid alcoholic extract of lobelia on a little loaf sugar, every ten or fifteen minutes, until the desired effect is produced, and have found it a more convenient and less offensive mode of administering the lobelia. This should be followed by small but efficient doses of podophyllin and leptandrin until a proper action of the bowels is brought about. Meantime the expectorant and sedative influence of the sanguinaria should not be overlooked. A favorite prescription with me has been, a sirup of sanguinaria and eupatorium, prepared by infusing two drachms of the former and half an ounce of the latter in half a pint of water, to which after straining add loaf sugar sufficient to form a sirup as thick as molasses, and give it in teaspoonful doses every hour, and oftener if necessary.

Those measures, or a part of them, with the hot hop fomentation to the throat, will be found all that is necessary in mild cases

without repeating the more active remedies. But in the more persistent or grave cases, it will be necessary to repeat all the more active measures I have just described, more or less frequently as the urgency of the symptoms appears to demand. I have also found the application of the cup, with scarification on the sides of the trachea or immediately over it, to afford more prompt and, by repeating it once or twice, more permanent relief than any measure I have ever tried. I am not aware that this measure was tried or recommended before the first case in which I resorted to it in 1835. In that case the child had been the patient of another physician and was given up as hopeless. Happening to have my cups with me, and finding the little patient gasping for breath, its head thrown back, and every symptom prognosticating a fatal result, it suddenly occurred to me that the application of a cup immediately to the trachea might aid in reducing the swelling and arrest the inflammation. I accordingly applied it, and drawing very carefully at first, I succeeded in producing a sufficient vacuum in the cup to answer the purpose; and after scarifying, I drew probably from half an ounce to an ounce of blood. I continued the cupping for half an hour or more, and the child meantime becoming more easy and breathing more freely, finally dropped into a quiet sleep, and with the use of other simple means ultimately recovered. Having tried this measure in many subsequent cases with entire success, or decided benefit, I do not hesitate to recommend it with the utmost confidence.

The beneficial effects of bathing the whole surface in broke water and whisky, can not be fully appreciated by any physician who has not witnessed its soothing and quieting influence in inflammatory diseases. As a means of allaying febrile excitement and subduing inflammatory action, it can not be too strongly recommended, and should never be neglected in cases of croup. It will frequently be no less important, when the head is hot and the feet inclined to be cold, to bathe the feet in mustard water. In such cases, it will materially assist in equalizing the circulation to wrap up the entire feet and ankles in wilted and rolled horse-radish leaves, being careful, however, not to allow them to remain long enough to draw blisters, an occurrence always in such cases to be deprecated. If these can not be borne, the common burdock leaves, on account of their rough surfaces, form a very good revulsive application for a similar purpose. Meantime the hot hop fomentation should be continued, changing more or less

frequently as the difficulty of breathing may seem to render desirable.

In obstinate cases, the repetition of the emetic for a number of times will frequently be indispensably necessary. In some instances, I have in the first twenty-four hours, given three or four moderately active emetics as the only apparent means of preventing the impending suffocation. The guide in the use of emetics should be the degree of obstruction and difficulty of respiration which characterize the case. But you should not torture your patient by administering them for the purpose of finding the traditional "nest-egg" which, by some uninformed persons, is anxiously looked for as the only hope of recovery. A case once occurred in my practice illustrating this absurd tradition. It was a case of the inflammatory modification, and when I was called presented great difficulty of breathing from the local engorgement; but the respiration was accompanied by a heavy mucous r le indicative of mucous secretion which was a more favorable symptom than the case had probably before presented. For the purpose of relieving the stomach of accumulations which evidently existed, and at the same time of aiding in the discharge of the mucus which had collected in the air-passages, I administered a free emetic, which very soon operated and brought away a large quantity of tenacious, glairy mucus in a single mass. Immediately upon the appearance of this substance an old lady present exclaimed, "there's the nest egg, now the child will get well!" And so it did, though not from the discharge of an imaginary ovum of the disease, but because the emetic broke up the train of morbid action which was already on the decline. In these cases the stomach should at the same time be kept slightly nauseated with the sanguinaria sirup, which has also an important sedative influence on the arterial action. The bowels throughout the whole course should be kept free, and the glands connected with them should be stimulated to the appropriate elimination of morbid elements. Efficient doses of podophyllin and leptandrin will accomplish this purpose. These then are the measures which, applied with discrimination and judgment, and repeated in whole or in part as the nature of the case may indicate, I unhesitatingly recommend as almost universally successful in the treatment of the inflammatory form of croup. They are means, allow me to say, both safe and efficient, leaving no impress of exsanguineous exhaustion nor involving the risk of constitutional mercurial contamination, often more to be deplored than death itself.

There is probably no disease known to the profession that has proved more generally fatal than the *pseudo-membranous* form of croup, and notwithstanding all the advantages of experience, its treatment has been and may still be considered more uncertain than that of either of the other varieties; but whether or not subsequent experience shall fully confirm the efficacy of the measures which I am about to describe, and which have proved eminently successful in my practice, and in the practice of those physicians who have tested them, I have no hesitation in saying that far more favorable effects may be anticipated from them than, so far as I am aware, have ever resulted from any other course hitherto used or recommended. I do not, gentlemen, desire to exaggerate, nor to recommend more strongly than facts justify. I predicate these strong assertions upon many years' experience with the "heroic" mode of treatment, in the first place, and latterly with the more mild and gentle course; and while I am pained to say that I have never yet seen a case recover under the former course, either in my own practice or that of any other physician, where the case was a well-defined and unmistakable one of pseudo-membranous croup, I am happy to say that, with the latter course, not one case has proved fatal out of six or seven equally well defined, and which with my former experience, I should have had no hesitation in pronouncing wholly incurable. I can scarcely hope that future experience will bring forth such triumphant success in a disease which has always been dreaded by the profession; but I have an abiding faith that this course will, if carefully and efficiently pursued, be attended with success equal to, if not greater than that obtained in most severe affections.

Under the erroneous impression, that inflammatory action had to be subdued before the deciduous formation could be expelled or its further increase arrested, I formerly pursued, in common with the most approved authorities, a most thorough and efficient heroic course of medication for the purpose of fulfilling the supposed indication. Active emetics, cathartics no less thorough, expectorants and antispasmodics of various kinds, and cupping, were administered in various doses and degrees to suit the constitutional peculiarities of the different cases, but so far as I was able to judge, without producing any favorable change on the symptoms of the disease, or in the least staying its onward course to a fatal termination. Indeed, they seemed in most instances sensibly to increase the local symptoms and hasten the final result. It was therefore in

view of these discouraging and frequently heart-sickening results, that I at length became fully convinced, after careful examinations of the post-mortem appearances and additional reflection upon the symptoms which uniformly existed in these cases, that the true indications had been wholly mistaken, and henceforward I determined that no more cases should prove fatal in my hands under that course of perturbing treatment. The course I marked out for myself to pursue, was predicated upon the indications which the symptoms during life, and the morbid developments after death, had satisfactorily shown to my mind were to be fulfilled. These are, to allay by appropriate local and constitutional treatment the existing irritation which produced the pseudo-membranous formation, and thereby arrest its further increase, and by a very mild, sustaining but quiet mode of management, to gain time for the exudation to soften up and be absorbed or thrown off by expectoration. This I had seen could be done, as in one of the cases I had examined, large portions of the pseudo-membrane had been thrown off. I can not perhaps more clearly convey to your minds the course I desire to recommend, than by reciting the history of a few of the cases in which I pursued this mode of treatment.

The first patient was about five years of age; the symptoms I learned had been coming on for four or five days, and the parents "did not think much ailed him, but as he breathed so badly they thought they would call a doctor." There were no evidences of general indisposition, but the voice had sunk to a whisper, and the cough was entirely muffled. I had no doubt of the fatal termination of the case, and so said to the astonished parents. I however concluded to test the theory which observation and reflection had suggested; accordingly I applied a cup and scarified immediately over the trachea, and also on the side of the larynx, and continued this operation for more than an hour. It required to be done very moderately and gently, especially at first, until the little patient became used to it. In this case, as in all others of the kind, I exhausted the air from the cups with my mouth, by which means the force of the draft could be easily regulated. The quantity of blood obtained was small, but the long-continued cupping produced an external local engorgement, which no doubt relieved the internal sanguineous accumulation, and thereby tended directly to change the current of the circulation. The cupping was repeated twice a day for two or three days in the same way. Immediately on completing this operation, I had the mother

apply to the throat a very soft onion poultice, which she had prepared at my request while I was cupping, and I directed this to be applied as warm as the patient could bear it, once every hour and a half or two hours through the whole twenty-four. To secure a strict compliance with this prescription, I directed that two or three good-sized onions should be constantly kept in the fire, and when fully roasted, to be mashed soft and applied directly to the whole anterior part of the throat.

The only medicine I had determined to administer internally, was a sirup of sanguinaria, prepared by steeping three drachms of the pulverized root in a common-sized teacupful of vinegar, and adding, after being strained, sufficient loaf sugar to make a sirup as thick as common New Orleans molasses. It should be given to a child in teaspoonful doses every hour; but if that quantity should appear to produce considerable nausea, the dose should be diminished, and this was most strictly enjoined if the child should show any tendency to vomit, as that was particularly to be avoided. When the medicine was objected to by the child, I have in a number of cases had the sirup boiled long enough to make candy, in which less offensive form the child would be allowed to eat it in appropriate quantities. Having also observed, that a moist atmosphere always produced an aggravation of the symptoms, I considered it important to keep the air as dry as possible, and the temperature at a moderately high range. And withal the patient was directed to be kept as quiet as practicable, as I had noticed that excitement of any kind always increased the difficulty of breathing.

These then were the measures, and the only ones, that I determined to use in the first instance, and as they happily proved successful beyond all expectation in that case, which as I have said was far advanced, I have ever since pursued the same course, and thus far with the same results. From morning until night in the first instance, I could discover no indication of a favorable character beyond the fact that the patient did not die, and was apparently no worse. But by the morning after, having repeated the cupping and all the other means just recommended, I could discover a slight amelioration in the symptoms, and by the next night a perceptible improvement, until finally the albuminous concretion began to come away in small patches or flakes. It was thus gradually discharged entirely, and the child recovered.

The next case had not continued so long as the first when I

was called, the parents of the child having been premonished by the fatal results of a similar attack in a neighbor's family. I found the child playing about the house without any indications of general derangement. But the muffled cough and the unceasing stricture character of the respiration, as clearly determined the nature of the case as though it had been further advanced. By listening to its respiration, the local obstruction was not less apparent than in cases of the most acute inflammation of the same parts. The same course was pursued as in the first instance, though not quite so vigorously, and with the same results. The four or five cases which I have since met with, presented grades of violence and progress varying between the first cases, and were all successfully treated with the same appliances, with more or less energy as their progress and symptoms seemed to render necessary.

Whether the essential nature of the disease consists in a high state of irritation, confined, as I suppose, to a particular set of vessels, or whether it be a state of more active inflammatory action, in either case cupping is better suited to relieve the local difficulty than any other means which can well be used. The local therapeutic influence of the sanguinaria, in stimulating the absorbents and exciting healthy mucous secretions in the larynx, will be fully appreciated only by those who have been accustomed to use this extremely valuable agent, and have watched its effects upon the diseased system. And although I have no *certain* evidence, that vinegar of sanguinaria exerts any more decided or specific influence on the pseudo-membranous formation than the common sirup would do, yet the known solubility of coagulated albumen in acetic acid is, to say the least, suggestive of more important influences than could be expected from the common preparation of sanguinaria; and as the cases treated with this preparation have recovered with unparalleled uniformity, I submit whether it is an unphilosophical suggestion. The object of the soft warm onion poultice, was to keep up a soothing antispasmodic influence upon the sentient nervous extremities of the parts to which it was applied, and thus communicate a favorable impression to the tissues immediately involved.

Having been led to analyze carefully the influence of the heroic measures generally recommended by the authorities, I believe the repeated opportunities afforded by my experience to observe their effects, have enabled me to discuss and estimate them with a degree

of certainty and satisfaction not always attained in the discussion of similar propositions; and I therefore submit a few general remarks upon the subject by way of conclusion.

If I have not shown in the discussion of the general subject of inflammation, that blood-letting is unphilosophical as a therapeutic agent in the treatment of inflammatory diseases, yet the concurrent testimony of most modern authors, who have pretty generally discarded the lancet in this form of croup, renders it unnecessary that I should particularly discuss that subject. If this modification of croup is really inflammatory in its nature, why should they thus discard a remedy which a large number of the profession hold in the first rank in the treatment of inflammatory affections? I think the point needs no further discussion.

Why administer emetics? If the affection is unconnected with general disturbance of the system, instead of a beneficial influence upon the local irritation, what can we expect from them but a derangement of the equanimity of the system, and a consequent diminution of nature's resources for the reparation of the local disease? The effort of vomiting can not be expected to dislodge the pseudo-membranous formation, nor to have any influence in bringing it away, unless previous influences have partially separated its attachments, in which case the violent cough sometimes superinduced by vomiting may, in some rare instances, have this effect. This partial separation will be indicated by the peculiar clatter attendant upon the cough. A gentle and quick emetic in that case might be of service, and it is the only case in which I should think it advisable. I have so often been disappointed in my expectations of effecting a cure from the operation of emetics, and even of affording temporary relief to the difficulty of breathing, that I have entirely abandoned them in this form of the affection. I am fully convinced, that, so far from exerting any beneficial influence, the repeated operation of emetics hastens the fatal result.

But emetics are not the only measures which clearly have been instrumental in aggravating the symptoms during the progress of this affection. Cathartics also, and even those of the mildest kind, have uniformly been followed by an increase in the difficulty of breathing, and thus far, in every instance where I have seen them administered, have failed to manifest any evidences of a salutary or favorable character. So also with the ordinary counter-irritating applications which I have used. A remarkable

instance, illustrating the entire inefficiency of simple counter-irritation, in affording the least benefit in these cases, occurred in a patient attended by another physician. A deep sloughing blister, with prominent and ragged edges, was found over the larynx and trachea, which did not in the least appear to modify the existing difficulty, but on the contrary, from the general disturbance upon the delicate organization of the child, produced by the extreme local inflammation, perceptibly increased the restlessness of the patient, and no doubt added to the local obstruction by causing a spasmodic action of the larynx. Having thus witnessed any thing but favorable effects from these perturbing measures, which in no instance within my knowledge resulted in the cure of the patient, is it a matter of surprise that all confidence in them should have been destroyed? I again repeat, that I know of no measures better calculated to fulfill the indications which the nature of the disease so clearly points out, than those which I have recommended. At the same time, I will add, that I would most cheerfully hail the discovery of any other remedies which would prove more efficient or even equally successful.

A few words in conclusion, in reference to an appearance of what is called a pseudo-membrane upon the fauces, uvula and tonsils, mentioned in the books. I have in a number of instances recognized, what I have no doubt was the membrane referred to; but it presented no appearance which indicated its identity with the pseudo-membrane of croup. It more closely resembled the appearance of deadened epithelium often seen in thrush. Although I have frequently seen this membranous or deadened epithelial formation in the inflammatory modifications of angina, I have never discovered its existence in the disease we have been considering.

LECTURE XLI.

LOCAL DISEASES—CONTINUED.

Physical Diagnosis: General remarks, Position of patient; Object to be attained; Phenomena to be observed; Manner of Percussion; Pleximeter: Auscultation defined; Different sounds in health explained; Abnormal respiratory sounds; Modifying circumstances; Vocal sounds; Friction sound; Importance of physical exploration.

PHYSICAL DIAGNOSIS.

Before proceeding to the consideration of the separate and distinct diseases of the chest, we will consider, for a short time, the subject of its physical exploration, and those organs contained within its cavity. I might detain you for a number of lectures, and perhaps with some degree of profit, with the consideration of some of the more minute phenomena elicited by such investigations, but since actual examination of healthy and diseased subjects, can alone so educate the senses as to afford satisfactory conclusions, I shall only detain you on the general outlines of this subject. It will be profitable first to consider the phenomena elicited by an examination of a healthy subject, with a view more properly to appreciate those connected with and growing out of disease. There are two methods employed in this process of investigation, to-wit: percussion and auscultation, though strictly speaking they may both be called auscultation, since the evidence comes through the sense of hearing. But before proceeding to a full explanation of the terms used in describing the phenomena of healthy and diseased organs, a few words in relation to some important preliminaries will be necessary.

In the first place, the position of the patient is of no small importance, both as regards the convenience of the examiner, and as greatly modifying the existing phenomena. If the position is proper it will materially aid the examination, and render the results more clear and satisfactory. The most easy and appropriate position is a sitting or an erect posture. When circumstances do not otherwise interfere, for the purpose of a more satisfactory

insight into the minute evidences connected with the case, it will be best to have the patient's entire chest exposed. In this way the physician can more correctly compare the relative proportions of its different parts, as well as obviate all embarrassments attendant upon the rustling of clothes on the patient's body and the instruments used in the operation. By this means also, the operator has the advantage of those evidences growing out of the application of the flat hand on any part desired. It becomes also an important consideration, to know what the normal conditions of the two portions of the chest are, both anteriorly and posteriorly, to fully appreciate in what the diseased condition consists. Any considerable deviation from the ordinary symmetry of those parts, or any special disproportion between the right and left side, either in front or on the back, should lead to the suspicion that diseased action had existed, if indeed it was not then to be found. There is no special standard or positive size by which, in this investigation, you can be governed; but any marked deviation from the known relative proportions of different parts of the chest, and also between it and the rest of the system, is clearly indicative of an unnatural condition, and will justify a careful and scrutinizing investigation. It may be remarked, however, that this entirely denuded state of the patient may not be expected or urged in all cases, since the delicacy of females under certain circumstances will reasonably bar such an exposure. But in any event, a single thin substance only should interpose, as any thing else would offer a material impediment to a minute appreciation of those phenomena connected with disease. Nor will it always be possible that every patient can thus be examined in a sitting posture. Next, however, to this position, the one most favorable to a full elicitation of the important symptoms is that of lying upon the back, when the anterior portion of the chest is to be examined. Another matter of some importance to the beginner in these investigations, though of little moment to the experienced ear, is an entire stillness in the room, neither admitting of talk or moving about.

The *character* of the respiration, as regards its frequent or rare occurrence, is a matter of considerable importance. There is a general standard by which its healthy or diseased condition may be judged. But this is only a *general* rule; for the size and age of the individual, and perhaps some other circumstances, offer exceptions not to be overlooked. About eighteen respirations to a

minute is the ordinary healthy standard, and any marked deviation from this in either respect, would point to an abnormal state. It is also a matter of practical importance to distinguish between that respiration which is of a thoracic character, and that which results mainly from the action of the abdominal muscles. I have in many instances been called upon to prescribe for children, supposed to be laboring under inflammation of the lungs, from the grunting, half-suppressed character of their respiration, when in fact the seat of the disease was in the bowels.

Percussion.—We now come to consider the immediate phenomena of percussion and auscultation. Percussion, as a means of investigating diseases of the chest, was practiced for a long time previous to auscultation. Although it does not alone afford certain and conclusive evidence of the existence or absence of disease, it is nevertheless, when taken in connection with other modes of investigation, an important means by which diseased action is determined. The philosophy of this operation is easily explained and readily understood. It is a well-known fact, that a slight stroke upon an empty cask elicits a far greater sound than is produced by a heavier blow upon one that is filled. So also a vessel partly filled will give a more dull and obscure sound than one entirely empty; and also one filled with porous substances will yield a sound far more resonant than when filled with more solid materials. The chest is a partially cylindrical and hollow structure when deprived of its contents; and when filled with healthy, spongy lung, affords upon percussion a distinct and resonant sound, essentially different from what it would give, were its contents of a more solid nature.

In making these investigations of the chest, it is of importance to consider, not only the parts upon which the examination is made, but also the particular physical conformation of the individual examined. For a person whose surface is thickly covered with a dense adipose structure, will afford a sound far more dull or less resonant than another of spare make, and a person advanced in life will afford a more clear and resonant sound than will be found in childhood or younger persons. So also it should be remembered that different portions of the chest, when examined, afford a very different degree of resonance in the same individual. An artificial division of the thorax has therefore been made, which you will find in most modern authors, supposed to facilitate the successful teaching of this branch of the subject. But for my own

part, I have failed to discover any thing but embarrassment from these divisions, and hence shall not trouble you with them. Still it is important you should bear this fact in mind, and always make a careful comparison of both sides of the chest, and of different corresponding parts of the thorax. One other fact of some consequence you will do well to remember in this connection, lest you may sometimes be misled. It is the difference of sound elicited by percussion during inspiration and expiration. The sound is more resonant during the former than the latter, and hence care in this respect should be observed.

The particular manner to be preferred in making *percussion* is worthy of a single remark. Many persons apply to the chest with one hand a thin smooth plate of some hard substance, as ivory, called a *pleximeter*, upon which they strike the ends of the fingers of the other hand; while others, and myself among the number, find one or two fingers laid flat upon the chest a good substitute for the pleximeter,—far more convenient and equally satisfactory. The terms Immediate and Mediate percussion you will find often used in your books. The former is used when nothing is interposed, but the fingers, in a partially flexed and conical state, are applied with a gentle tap directly to the part to be examined, while the latter implies the interposition of the pleximeter or the fingers of the other hand. A moderate resonance or reverberation is characteristic of a healthy condition of the lungs, and any considerable deviation from it, either by an excess of sound or an undue dullness, is indicative of disease. In the first instance, a distinct hollow sound would indicate the absence or destruction of more or less of those parts that naturally exist; while in the other, a dull or obscure sound, or an entire absence of it, would indicate more or less obstruction, or an entire obliteration of the air-cells. It is important in all these examinations, especially where there is any doubt in the case, to make a general exploration of every accessible portion of the chest. Nor should the fact be lost sight of, that some portions are naturally more dull and obscure in their resonance than others. Remember also, that no teaching that a student can have, other than that at the bedside of the patient or upon the healthy subject, can ever afford any satisfactory evidence necessary to the investigation of disease.

Auscultation may be defined to be the act of listening to the sounds emitted within the body, with the unassisted ear, or through the aid of an instrument called the stethoscope, which is simply a

tube for conducting the sound to the ear. The former method is termed immediate and the latter mediate. In order to appreciate the phenomena of disordered action, it is of course essential that the natural, healthy sounds should be understood. By placing the ear upon the chest of a healthy individual, or by the interposition of the stethoscope, two healthy sounds, more or less distinct, are readily recognized. These sounds are called the vesicular murmur and the bronchial or tubal sound. The former results from the passage of air into the minute cells of the lungs, and from the expiration of the same. The latter is the result of the passage of air through the large bronchial tubes.

The *vesicular* murmur is much more distinct and easy to be recognized upon inspiration than expiration. What the particular cause of it may be is somewhat difficult to determine, though it probably arises to a great extent from the friction against the walls of the minute cells, produced by their sudden inflation. The vesicular sound, or respiratory murmur, as it is frequently called, will usually be heard during inspiration, over all parts of the chest, or wherever the lungs come in contact with its walls; but during expiration it will frequently require much experience and tact to detect it. It is somewhat difficult to describe this peculiar sound with accuracy to an unschooled ear, or to find any thing with which to compare it. It is a soft, diffusive murmur, or breezy sound, much like the rustling of the air through the leaves of a tree, gradually increasing from the commencement of inspiration until near the close of that act, when it subsides, and again becomes apparent during expiration, though more feeble. But since your own observation and experience are so necessary in order to become familiar with this sound, I will make no further effort to describe it; enough having been said to guide your ear to its detection. You should however, remark that it will be found very different in different individuals, and in different parts of the chest. In children it is quite loud and apparent, and has in consequence received the technical name of *puerile*; while in old and debilitated persons it is much less distinct, and is styled *senile*. In those individuals in whom it is not easily recognized, it will become very apparent by directing the patient to take a full and slow inspiration.

The *bronchial* sound is very liable to be overlooked in our first efforts at physical exploration; yet by care and particular attention it can be recognized. It is a hoarser sound than the vesicular murmur, and sounds like air passing quickly through a tube. This

sound is confined entirely to the trachea and larger bronchial tubes; though when the lungs are in a congested or hepatized condition, the respiratory murmur being destroyed by the partial or complete occlusion of the air-vesicles, it becomes very apparent even in the smaller ramifications; and in these cases the natural sound in the larger tubes becomes much exaggerated, and is apt to mislead the novice in these investigations, the sound being mistaken for a cavity. I well remember a notable instance where a physician of some pretension to skill pronounced a case of this description entirely hopeless and beyond the reach of remedial resources. One lung he declared was almost entirely gone; notwithstanding which however, the patient perfectly recovered, and is now in the enjoyment of good health. This sound can always be heard with great distinctness over the trachea, and hence in this region has received the name of tracheal sound. It can be readily appreciated and understood by a simple experiment out of the body, that is, by blowing forcibly through a tube of moderate size.

The description of the sounds now given, refers mainly to those produced in *healthy* subjects. In *disease* they are all liable to numerous modifications. The vesicular murmur may be much louder and longer-continued, and complicated with other sounds, resulting from inflammatory action, or from a high grade of irritation not amounting to positive obstruction. It may also be increased in one lung, from having the functions of both to perform, and likewise in a portion of a single lung where other parts of it are much oppressed. The practice of tight lacing, by obstructing the full development of the lower parts of the lungs, frequently renders very distinct the respiratory murmur of the upper portions. In some instances, it will be found impossible to recognize the sounds at the commencement of an examination, owing perhaps to an obstruction accidentally existing from spasm or other causes in the smaller ramifications in the bronchial tubes. But by repeated trials and change of position of the patient, or a more successful effort at inspiration, it may be heard. The phenomena here referred to will often be noticed in spasmodic asthma. In those cases in which the bronchial sounds are very loud and apparent, resulting from obliteration of the air-cells, the respiration is called bronchial or tubal; but in those cases where the air passes into a distinct cavity, with which alone the bronchial sound is apt to be confounded, it is called the cavernous sound. The latter is a more puffing, blowing, and sudden or abrupt sound.

There are other sounds, occurring in diseased conditions of the lungs, which frequently entirely supersede or destroy those of a healthy character. These are called *râles* by the French, and *ronchi* by the English. They result entirely from an altered condition of the tubes through which the air passes, or from undue and morbid secretions from the mucous surfaces, through and over which the air moves in the act of respiration. These sounds or *râles* are of two distinct varieties, resulting from certain conditions of the mucous surfaces and of the secretions from them. They are designated as dry and moist *râles*. Of the dry *râles* there are two varieties specially worthy of attention, called the sibilant and sonorous. The sibilant *râle*, as its name indicates, may be recognized as a low whistling or hissing sound, which may be heard during both inspiration and expiration. This sound is produced by the increased rapidity with which the air passes through particular portions of the smaller bronchial tubes, which are diminished in caliber by engorgement of the mucous membrane, or by adherent secretions, or frequently by spasmodic contraction of the tubes from irritation. The sonorous *râle* is produced by the same cause as the sibilant, but occurs in the larger tubes. It is a deep, grave, and dry sound, heard during both inspiration and expiration, though most distinctly in the latter, while the sibilant is most marked in the former. It has been likened to the snoring of a man, or the cooing of a dove, or the bass notes of a violin. It varies much in intensity, sometimes being scarcely perceptible, while at others it can be heard at some distance from the chest, and even gives a vibratory motion to its walls.

The *moist* or *mucous râles* are caused by the passage of air through the bronchial tubes of considerable size, containing mucous or other fluids, as pus, blood, etc. The sound is that of bursting bubbles. When the bubbles are small and confined to the smaller tubes, the sound is called submucous. In this case the sound is finer and more crackling. The *crepitant* and *subcrepitant* *râles* are also varieties of the moist *râles*, removed still further from the larger tubes, being confined entirely to the minute ramifications. The *crepitant* *râle* is of a decidedly crackling character, and may be compared to the sound of burning salt, or that produced by rubbing a lock of hair between the fingers. It is heard almost exclusively on inspiration. The crackling is quite fine and uniform, and requires more attention and experience to detect it than

many of the other sounds before mentioned. Nevertheless it is a very important diagnostic sign. It results from the sudden separation of the agglutinated walls of the minute bronchial tubes and air vesicles. Most of the mucous sounds will be removed or essentially modified by an effort at coughing; but the crepitant sound will not be thus affected, clearly showing that it is not entirely dependent upon mucous secretion, but also upon a swollen and engorged condition of the vesicles and minuter tubes. The subcrepitant râle resembles to some extent both the mucous and crepitant. It is a moister sound than the crepitant, and a finer and more crackling and uniform sound than the mucous. It also differs from the crepitant in being heard during both inspiration and expiration. It is scarcely necessary to remark that all these sounds may be more or less blended in the same case, and not unfrequently the natural respiratory murmur may be more or less obscurely heard in connection with them.

All the sounds may also be *modified* in character by the manner in which respiration is conducted. For example, while the crepitant râle may be distinctly heard over a portion of the lung upon a full inspiration, it may be very difficult to detect, or may not be heard at all in ordinary breathing, nor in the partially suppressed respiration frequently consequent upon inflammatory action. These sounds or râles do not occur throughout the entire extent of the chest at the same time, but will be found confined to a smaller or more extended portion of it. In most instances but one lung will be found to be involved at a time, and generally only a portion of it. Owing to the difficulty experienced in detecting the true condition of the parts involved, from the intermingling of these different sounds, it frequently requires great patience and perseverance in order to a correct analysis of the case. There are other sounds, not however so important or distinct, and in fact not so easily understood or recognized as those which I have described, which you will find discussed in the books on the subject, to which you can refer if curiosity prompts you to do so.

The *vocal resonance* or *sounds* have an important bearing in determining certain forms of thoracic disease, and should not be overlooked in our investigations of this important group of morbid phenomena. The method is called auscultation of the voice, and is performed in the same way as auscultation of the lungs, with this difference, that in the latter the sounds produced by respiration

are observed, while in the former it is the sounds emitted in speaking that we seek to hear. As it was necessary, in order to appreciate the morbid sounds of the lungs, first to know those that are healthy, so it is important to understand the healthy or natural sounds of the voice in order to distinguish those that are unhealthy. By applying the ear or the stethoscope to the throat or the upper part of the chest, over the sternum, while an individual is speaking, the vibrations of the air become so sensible and loud that it is difficult to convince yourself for the moment that the person's mouth is not directly at the ear. But the want of distinctness in the articulation soon shows the error. The sound is no doubt produced by the vibrations of the glottis, and thus communicated by contiguity of parts in contact with the throat. This sound is called tracheophony, or the voice through the trachea. By changing the position of the ear or the instrument to lower and more lateral portions of the chest, on either side of the upper or middle portion of the sternum, in the axilla or on either side of the spine between the scapulæ, the vocal vibrations will still be heard, but more diffused or less apparent than higher up. This is owing to the diminished size of the tubes through which the vibrations move, and also the increased density and thickness of the structures through which the vibrations are communicated. This is called bronchial resonance or bronchophony. As you get further removed from the larger tubes, and over the greater mass of the pulmonary tissue, this vocal sound is less distinct or entirely wanting. It will however, be heard, or if not distinctly heard, be recognized by a kind of vibratory sensation communicated to the ear, as well as to the hand, when applied with its palmar surface flat upon the sides of the chest. This sound is called the pectoral vibration.

It should be remarked in this connection, that these vocal sounds, whether in health or disease, will be greatly modified by the original character or peculiarities of voice, and also by the physical conformation of the individual examined. While a thin or spare person will develop a sound more distinct and audible upon articulation, so also will a shrill or treble voice, apparently of less volume, be more apparent over the large bronchial tubes, and thus communicate a more sensible resonance at that point. The vibrations will be more sensible to the touch from a bass or grave character of voice, and will be heard at remote portions of the lungs at

which the bronchial resonance could not be observed. This will be found in diseased action as well as in health. Thus it may be remarked, when we hear the bronchial resonance at portions of the chest where it is not usually observed, the existence of disease may be correctly and legitimately inferred. Hence it becomes a matter of importance to know the character of the sounds both of respiration and of the voice in the different portions of the lungs. A very safe, though not a universal rule would be, to compare the two sides at corresponding points on each. If for example, we recognized a distinct vocal resonance at the upper portion of one lung, while at a corresponding point on the other it could scarcely be heard, it would be quite certain that some physical difficulty in one or the other of the two sides would be found to exist. Thus if in the examination of disease, we find a very sensible bronchial respiration, and bronchial vocal resonance over a portion of the lung, where we usually find a respiratory murmur and pectoral resonance of the voice, and upon the corresponding point on the other lung, a healthy, natural condition can be observed, we may very safely conclude that a portion of the pulmonary vesicles have become obstructed, and a partial or complete consolidation at that point has taken place. These phenomena will invariably, when the condition referred to exists, be accompanied by a dull or flat sound upon percussion at that particular point.

The most sensible modification produced on the voice, grows out of a thin layer of liquid between the lung and the walls of the chest. It is rendered more sensible and striking, probably, by the vibrations of the fluid produced by the vocal resonance of the lung, and is hence transmitted in a broken and tremulous manner. This sound is well compared to the bleating of a goat, and is called by Laennec *œgophony*. This peculiar sound is almost entirely dependent upon effusion into the pleural sac, from pleuritic inflammation, by which compression of the pulmonary tissue is produced; and thus the vibrations of the vocal resonance are readily communicated in this strikingly modified character.

There is another sound dependent upon a well-known condition of the lung, of great practical importance, to which I desire to call your attention before leaving this subject. From whatever cause a cavity is formed in the parenchymatous substance of the lung, the voice will pass into it, and will be heard as distinctly by the ear applied to the chest, as when applied to the region of the

trachea. The term used to designate this vocal sound is called *pectoriloquy*. It is not so distinct in those small abscesses usually attendant upon protracted cases of tuberculous consumption, but when the cavity is of considerable size, and exists near the walls of the chest, and opens into a large tube, the phenomenon is very distinct, and sounds as if the voice was in immediate contact with the ear.

I have thus endeavored to describe to you the main phenomena produced by respiration and the voice, in health as well as in disease of the lungs. I have omitted some of the distinctions made by the authorities, partly because I do not desire to burden your minds at this time with an unnecessary minuteness on a subject which can only be mastered in a different place, but mainly because those I have omitted I consider of much less practical importance in your investigations.

There is one other sound described in the authorities, upon which I will make a few remarks, chiefly because I have not been able to satisfy myself that it is produced by the cause to which it is assigned, and hence do not attach so much importance to it as others have seen fit to do. I refer to what the authorities call the *friction sound*, said to be produced by the rubbing together of the pulmonary and costal and pleuræ, in a roughened condition caused by inflammatory action in those membranes. In those cases where I have observed that sound, I confess almost any other explanation would have occurred to me, as affording a more satisfactory solution of it than the one which has been given of it by other observers. Instead of that sound which the term friction alone implies, a kind of rubbing or dragging sound, we hear a "succession of quick jerking sounds," not in the least analogous to any conceivable sound produced by two soft and plastic surfaces, but slightly if at all moving over each other. In addition to this difficulty, it is impossible for me to properly conceive of motion between these surfaces sufficient to produce the sound above described, or even any sensible sound at all. The amount of movement between the pulmonary and costal pleura is very slight, and difficult to appreciate, while friction sufficient to produce the sound referred to presupposes a difference of movement of a very considerable amount, and entirely incompatible with the requirements of the system. I do not suppose this loose and detached condition of the pleural surfaces is for the purpose of unequal movements between the lungs and

the ribs, but to provide against other and more important contingencies with which the profession are familiar. I do not however intend to be understood as denying the existence of this difference of movement entirely; but must confess my incredulity to the extent necessary to explain the phenomenon in question. And while I am thus in doubt in reference to the explanation usually given of this often-recurring symptom in a common disease, I have no difficulty in suggesting an explanation, more in accordance with the character of the sound, and the general philosophy of the case. It is an attendant symptom upon inflammation of the pleura, but not always present. The explanation I conceive can be found in the partial obstruction of more or less of the pulmonary vesicles on the periphery of the lung, in contact with that portion of the pleura involved in disease. And the reason it continues but a short time in a case of active disease as all observers know to be the fact, is not as is generally supposed because effusion has taken place, but because those pulmonary vesicles in contact with the diseased tissue, are entirely or almost entirely obliterated, when this would of course necessarily cease. But on the decline of the disease and return of the respiratory movement the phenomenon is again developed. This too accords with general observation. In those cases where the sound is not discovered, I suppose the costal pleura alone to be involved. If this sound were dependent on the roughened condition of the pleura, it should be heard in every case, not even excepting that in which the inflammation is confined to the costal pleura, though in the latter it might be less in quantity. I have already referred to the peculiar character of this sound, and will again say that in listening to it, no one would for a moment think it could be emitted by the gentle and very partial movement of two plastic surfaces upon one another; but would at once recognize a striking analogy between it and the sub-crepitant râle, well known to characterize inflammation of the substance of the lungs. Nor is this observation entirely peculiar to myself. Dr. Wood says, "it sometimes closely resembles the sub-crepitant râle," showing clearly that my views are not wanting in support by the observations of others.

In concluding these general remarks on the physical phenomena presented in examinations of the chest, I can not too strongly press upon your attention their vast importance, in view of every consideration connected with your own reputation and moral feeling,

as well as the inestimable advantage often resulting to those reposing confidence in your skill and practice. You should therefore, lose no opportunity to avail yourselves of every advantage that may offer, to become familiar not only with the symptoms connected with morbid action, but also, in order more fully to appreciate in what disordered action consists, to thoroughly examine and fully understand the phenomena of health connected therewith. The respective diseases of the respiratory apparatus will present symptoms of a physical character peculiar to each, in discussing which we shall again have occasion to refer with greater minuteness of detail to this subject.

LECTURE XLII.

LOCAL DISEASES—CONTINUED.

Bronchitis: Varieties; Acute; Mild attacks, Symptoms, Periodic febrile symptoms; More severe grade, Symptoms; Brain affected; Generally modified by malaria; Physical diagnosis; Anatomical developments; Cause; Treatment; Subsequent cough; Remedy; Diet; Remarks on bleeding.

BRONCHITIS, OR INFLAMMATION OF THE MUCOUS MEMBRANE OF THE BRONCHIE.

Of this disease there are two varieties, distinguished by the terms *acute* and *chronic*. We shall first consider acute bronchitis, it being a disease of more common occurrence, and greater practical importance than the chronic form. Under this head we shall have to treat of every grade of violence incidental to the complaint; from the slightest cold, producing irritation of a portion of the membrane, to the most grave, extensive, and active inflammation, affecting the whole mucous surface, as well as the sub-mucous and cellular tissues of the bronchial tubes. In its mildest forms it usually commences with a slight irritation, and symptoms of coryza. Taking its rise in the nasal cavity it gradually extends itself to the mucous membrane of the trachea, and bronchial tubes. These symptoms may in some cases continue for a few days without producing much constitutional disturbance, and then gradually subside, accompanied only by a copious expectoration of thick mucus.

In other cases however, it commences with more violent and urgent symptoms, involving from the first the laryngeal, tracheal and bronchial mucous surfaces, with a development of catarrhal fever, which may accompany the case with more or less severity through its whole course. Whether the attack be slight or severe, a troublesome and irritating cough, and a sensation of soreness is experienced behind the sternum. The soreness will be more particularly complained of during the paroxysms of coughing. The cough is characterized by a rough, scraping, grating and tearing sensation, for which reason I have been in the habit of designating it by the laconic expression of "bronchial cough."

In this stage of the disease, very little expectoration will be found to exist, though the cough may exhibit, by the sound, the character of copious and free secretion. Shortly however, as the disease extends itself into the mucous membrane, a glairy or frothy mucus, tenacious in its character, sometimes streaked with blood, is thrown up in great quantities, which not unfrequently is saline in its taste. As the disease progresses, the skin exhibits marked evidence of direct sympathy with the parts affected, evinced by imparting a dry, husky, harsh sensation to the touch, and most generally an increase of temperature. In young or middle aged persons, this increase of heat will be readily discovered; in aged persons it will not be so apparent, especially upon the extremities. In this stage, also, the urine becomes essentially deranged, scanty and high-colored, the pulse full and frequent, the bowels are unusually costive, the tongue, though moist in most cases, exhibits a furred or loaded appearance, and usually considerable thirst, not readily quenched or satisfied, accompanies the disease throughout its progress. Respiration, though not as hurried as in inflammation of the lungs proper, by turns is difficult and oppressed.

In this form of inflammation, dependent, doubtless, on a want of change in the character of the blood, so essential to health and life, more of severe pain in the head is experienced than is usual in other inflammatory diseases.

In a large majority of cases occurring in this Western country, the associated fever is distinctly of a *periodic* character, as is shown by a well-defined remission in the early part of the day, and a distinct exacerbation every evening. This remission in many cases is so distinct, as readily to be mistaken for the autumnal remittent fever, so common to this country. During the whole progress of the disease, the cough is exceedingly troublesome, and often occurs in distinct paroxysms.

In the ordinary cases which have come under my own observation, the active symptoms, under appropriate treatment, gradually decline, accompanied with a copious expectoration of an opaque, white, yellow, or greenish character, associated with a decline of fever and all the other symptoms of active disease. The pulse becomes soft, full, and less frequent, the skin moist and cool, and the urine more free, depositing a copious sediment on cooling.

Another and more formidable grade of bronchitis will occasionally be met with, attended with symptoms of extensive *congestion*, occurring principally in young children and in very old

persons, in whom there is not sufficient vital force or recuperative energy to throw off disease. In these cases the symptoms are all of a more aggravated character; and as the disease progresses the inflammation will be found to extend into the more minute bronchial vessels, and perhaps into the air-cells of the lungs. Great oppression and difficulty of breathing are also characteristic of this modification. This arises from a thickening of the submucous and cellular tissues, which offers an impediment to the free passage of air. If it extends to the more minute air-cells of these organs, a more hurried and oppressed respiration will point to the condition. It will also be readily recognized by the physical phenomena developed by auscultation and percussion. A distinct blowing sound will be observed, accompanied with attacks of dyspnœa, producing in many cases a state bordering on asphyxia, which will only be relieved by an expectoration of glutinous and sticky, inspissated mucus, which in some instances almost resembles a membrane. If this great and palpable obstruction continues, the blood very soon becomes loaded with carbonaceous matter, or does not undergo the change so essential to its free circulation in the capillary vessels. Under these circumstances the brain, which is always one of the first organs of the body to suffer from a want of proper oxygenation of the blood, shows unequivocal evidence of this condition. A sensible nervous depression, peculiar to all such cases, shortly makes its appearance. The face becomes pale, the lips livid, the surface cool, the pulse frequent and feeble, and patients sink into a comatose condition, from which it is often difficult to arouse them. Cases of this character are usually preceded by a protracted and severe chill, generally followed by an imperfect reaction of the system. In some cases the bronchial cough is associated with distinct symptoms of a spasmodic character, manifesting clear indications of spasmodic asthma, occurring in protracted paroxysms.

Although I by no means deny the existence of bronchitis, as a pure and unmixed disease, yet it will be found in most cases occurring in this country, *associated with fever* of a distinct remittent type; and it is this association with malarial influence that invests it with a graver and more serious character. It occurs also at a season of the year particularly favorable to such results; the more serious and most clearly defined cases being unusually prevalent during our open winters and early spring months, when the changes from heat to cold are both sudden and extreme, a season

of the year highly favorable also, to the production of malarial poison.

The physical symptoms characteristic of this form of pneumonia are not less peculiar than those of a general character, and in many instances more to be relied on in forming a correct diagnosis. Having already pointed out, as far as circumstances would permit, the particular mode and results of physical investigations, I shall not now dwell at any great length upon this branch of the subject, but only so far as may be requisite to the full comprehension of the diagnostic phenomena connected therewith. It will be found upon percussion, unless the substance of the lungs proper has become involved in the case, that a distinct, resonant clearness of sound, not unlike that of health, will be heard, while if the substance of the lungs be involved, more or less dullness will be observed in proportion as the disease extends to the substance of the organs.

Not less important in this investigation will be those developments growing out of auscultation. When the inner surfaces of the bronchial tubes in their more minute ramifications are swollen and dry from inflammatory action, the air, as it passes in and out, but more especially as it passes in, will produce the peculiar sound known to the faculty as sibilant or dry r  le, which will be readily recognized in common language by a hissing, whistling, or wheezing respiration; but if it has not extended to the more minute bronchial tubes, the sound has been compared to the cooing of a pigeon, or the bass note of a violin, technically designated sonorous r  le. These are the two modifications of sound which are developed in the early stage of this disease, resulting from a dryness of the inflamed mucous surface. They may be co-existent, or exist separately; the sonorous r  le accompanying inflammatory action in the membrane belonging to the larger tubes, while the sibilant will only be developed by a similar condition of the more minute bronchial passages. If the inflammation is confined to the bronchial vessels proper, the respiratory murmur peculiar to a healthy lung will be palpable and distinct, unless the two sounds above referred to, obscure this vesicular one, which will rarely be the case, except in weak and debilitated persons, or young children. In fact, in most cases, this vesicular sound will be somewhat increased and more audible in expiration, unless the inflammation extend to the pulmonary vesicles.

Contraction of the bronchial vessels, from swelling or spasmodic

action takes place generally in this disease, so that we may expect to hear these sounds in the greatest number of cases. Mucous râles are not unfrequently associated with the sibilant. If the smaller tubes are much involved, mucous secretion, more or less free, is usually attendant upon the disease, more particularly during its progress or on its decline. In this case the mucous râles will be heard.

What I more especially desire to impress upon your minds however, is the peculiar diagnosis by which this disease is usually recognized: namely, the dry râles, sonorous and sibilant, more or less mixed with the moist or mucous; and the usual resonance on percussion. These, with the peculiar rough grating bronchial cough before mentioned, are the symptoms, by a careful observance of which the disease may be recognized.

The *anatomical developments* growing out of this disease are not less peculiar than the symptoms which characterize it. These developments however, depend greatly upon the extent of the disease as well as on the peculiarities of the constitution in which it is found. Whatever may be the condition of the patient, the mucous membrane will be found more or less reddened in patches, and in most cases highly engorged and thickened; while at different points it will usually be found softened or ulcerated in its texture. This will be more particularly the case where the disease has been protracted in its progress.

In some cases a more diffused and general redness, unattended by any swelling, will be observed throughout its whole extent; in other cases, again, extensive accumulations of a tough, tenacious mucus, or of muco-purulent secretions, dependent on the extent of the disease, will be found to exist. In most cases the lungs will be found more or less involved, exhibiting those appearances characteristic of inflammatory action.

The most common *cause* of bronchitis is the exposure of the system to sudden changes of temperature. It is frequently brought on by currents of air drawing through open doors or windows directly upon the head or back, as well as by wet feet of long continuance, by exposure of the system when unduly excited or heated, and by other like causes.

Another very common cause essentially influencing the violence as well as the obstinacy of this disease, may be here mentioned; viz., epidemic influenza, the history of which would afford an interesting item in your medical studies, as it has been the subject

of elaborate essays, and the theme of multiplied theories respecting its recondite and obscure nature. We have had a number of notable instances of its prevalence, not only in the United States but throughout the world. Although as fatal in the aggregate as the cholera, yet it is rarely so understood or looked upon by people in general, who regard its appearance with comparatively little alarm or apprehension.

Bronchitis is also a common attendant on measles and whooping-cough, and in fact it may be questioned, whether the essential characters of those diseases, are not dependent to a certain extent, upon inflammation of the mucous membranes of the bronchial tubes associated with their specific natures.

Treatment.—A large majority of these cases, whether occurring as epidemics, or such as we often find somewhat endemic in their character, may readily be thrown off or relieved by very simple means, and even in many cases without treatment of any description. But for the safety of the patient, as well as the reputation of the physician, when called upon to visit these cases, it will be best to make use of those measures, though simple in themselves, which are best calculated to fulfill the indications presented, even though such cases might be expected to terminate favorably without such applications. For this purpose the patient should be directed to use a warm saline foot-bath and some mild diaphoretic infusion, with the addition of a small portion of sudorific tincture, say a drachm every hour until free and general perspiration is produced. It will be well also to follow up this treatment by administering on the following morning some mild aperient, especially if the bowels should be somewhat confined, or the cough troublesome; such as a Scidlitz powder or mild pills, or if there are evidences of inactivity of the liver, half a grain of podophyllin and one grain of leptandrin.

I frequently use a sirup prepared from a decoction of eupatorium perfoliatum and sanguinaria canadensis, and at night on going to bed add a small portion of paregoric; or, as a substitute, the compound tincture of Virginia snake-root, in appropriate doses mixed with salad oil and loaf sugar, will afford most certain and prompt relief. In many cases a mild vegetable diet, and keeping the patient within doors, will be all that is necessary; but in cases presenting symptoms of a more urgent character, a more active and heroic treatment will be indispensable. In such cases, where there is evidence of extensive derangement of the stomach, a mild

but thorough emetic will not only afford much relief to the patient, and greatly modify the existing symptoms of active disease, but will also have an important influence on the stomach, preparatory to the adoption of those measures which will afterward be found necessary and proper. This may be followed, if the circumstances of the case seem to require it, by a small portion of podophyllin and rhubarb, or in many cases two grains of leptandrin may be substituted for the rhubarb, to be administered at night on going to bed.

The symptoms presented, and the actual condition of the patient, should never be lost sight of in the administration of your remedies; therefore if you find the patient in a high state of febrile action, more simple and palliative remedies should be applied, before resorting to those active measures already mentioned: such as general bathing of the whole surface with broke water and whisky in equal parts, until the heat of the body, and the high state of arterial action has measurably subsided. This febrile condition, like the exacerbations characteristic of a large majority of the diseases of this Western country, generally takes place in the evening; therefore, if called in the evening, while this condition of the patient is found to exist, it will be desirable to defer the administration of the emetic until morning, or until those active febrile symptoms have in some measure subsided. Meantime however, frequent bathing of the entire surface, as often at least as once every hour, together with hot fomentations applied to the chest, such as a bag of hops wet in warm water, with the internal administration of an eighth of a grain of podophyllin, and one grain each of ipecacuanha and leptandrin, will not only add much to the comfort of the patient, but will tend to increase to a considerable extent the stage of remission. The administration of these powders should be repeated once in two hours, until their cholagogue and cathartic action is manifest, or until a distinct remission is brought about. When these results are effected, if it be found necessary, the administration of an emetic will be appropriate and in most cases beneficial.

It is a matter of some importance to know the particular kind of emetics that can with the greatest confidence be relied upon. After much experience, I would recommend an infusion of lobelia and boneset, as being the most prompt and efficient in its operation, and fulfilling all the indications desired in a greater degree than any other I have ever used. In those cases not palpably

associated with fever of a particular character, the measures already recommended should be followed by the administration of thorough and general diaphoretics. The common sudorific tincture administered in drachm doses, in connection with the free use of *asclepias tuberosa* or pennyroyal tea, and repeated as often as every hour, or hour and a half, for two or three times, will rarely fail to bring about desirable and important results, and it will be found in many cases that all the active and urgent symptoms will gradually subside. Even if, in some cases, your expectations are not fully realized, a very decided amelioration in the urgency of the symptoms will follow these efficient appliances. It may be necessary to repeat the next day or the day following, both the emetic and cathartic, though as a general rule their repetition will not be necessary; and if it be not thought requisite to repeat them, the system may be kept constantly under the influence of a sirup of sanguinaria and eupatorium, to the extent of producing a constant but slight nausea, which will soon be followed by more or less copious expectoration. Another important influence of this sirup under these circumstances, when administered to the extent directed above, is to diminish the force and frequency of the heart's action, and thus in a very sensible degree tend to reduce local engorgement.

In those cases in which the cough exhibits the peculiar spasmodic symptoms so often characteristic of bronchial inflammation, the free use (to the extent of its specific action) of the extract of hyoseyamus, will be found to exercise an important influence in controlling those symptoms. It should not therefore, be forgotten when the cough comes on in severe and protracted paroxysms, and should be repeated with sufficient frequency to produce the effect required.

In most cases occurring in this Western country, there will be found upon investigation, associated with this bronchial disease, fever of a distinct periodical character. Where this is the case no measure can with so much certainty be relied on for the removal of all urgent symptoms, and for bringing about a favorable termination as antiperiodic remedies. From the first tendency to remission, whether it be in the beginning of a case or at a later period in its progress, there should be given three grains each of quinia and prussiate of iron every two hours until the next exacerbation occurs, when it should be suspended. The surface should

then be frequently and freely bathed, as before directed, and other measures used heretofore recommended in similar conditions of the system, until a remission follows, when the antiperiodic remedies should be repeated. In most cases an exacerbation on the second day will either be altogether prevented or its duration and severity materially diminished, and an amelioration of all the general symptoms will be observed. The administration of the antiperiodic remedies in the first remission, and their repetition during the intermission, will generally relieve the case; or if not, the employment of some simple measures will accomplish that object in a few days.

However suddenly the more urgent symptoms may be removed, or however soon you may succeed in throwing off the active febrile symptoms, either in the simple and uncomplicated form of bronchitis, or in its association with malarial fever, a difficult and obstinate cough will often be found to ensue, in which case it will be necessary to have recourse to those palliative measures so important in all cases of local irritation unconnected with, or following, active disease. Under such circumstances, the sirups of sanguinaria and eupatorium with an equal quantity of paregoric, administered in drachm doses a number of times during the twenty-four hours, will be found a valuable and reliable prescription. For children, when the cough follows an attack of this kind, or supervenes in measles or any other form of disease, appropriate doses, according to the age, of from five to twenty drops of sudorific tincture, mixed with from one to two teaspoonfuls of salad oil and loaf sugar, will be found to answer an excellent purpose, especially if taken at bed-time. I have also often prescribed with the most marked advantage, the sirup of balsam tolu and senega, from one-half to a drachm, with one-eighth or a twelfth of a grain of morphia to each dose, repeated three or four times a day, but more especially at night. If with this cough we have a slight remnant of febrile action lingering about the system, though a sensible amendment from day to day may be observed, frequent ablutions over the entire surface with whisky and water, made warm and applied with considerable friction, will be found a valuable appliance not only in its influence on the general system, but as exercising an important control over the severity of the cough. There are other measures which might aid in the removal of this and kindred diseases, which the individual experience of every physi-

cian will teach him, but I trust you will find the general outlines of treatment here recommended, reliable and safe.

In regard to *counter-irritating* applications, or the use of cups on the chest, in pure bronchial inflammations, I must say I have not heretofore derived much advantage from their use; I have therefore recommended the hot hop fomentation in their stead.

The *diet* in all such acute diseases should be of the most light and simple character; but after the disease is removed more especially in those severe cases where the system has become greatly debilitated, a nutritious and tonic diet should be directed.

Before concluding this branch of the subject, it may be expected that I should say something more in relation to the treatment of the *epidemic feature* of this disease, which has so often presented itself throughout the different sections of our globe. By reference to the authorities, it will be observed that I have in many respects differed materially from them, not only in the choice of remedies to fulfill the same indications presented in the case, but also in *not* recommending, in any case whatever, those remedies of all others considered the most important and efficacious in the great variety of inflammatory diseases, among which blood-letting by no means stands the least conspicuous.

I have on another occasion treated this branch of the subject to a very considerable extent, and there endeavored clearly to define my views and opinions on inflammatory action generally, the true condition it presents, and the proper course of treatment to be pursued for its relief. I will only therefore mention, in this place and in this connection, that the reasons there set forth apply with equal or greater force in the form of disease now under notice. And since I have not found that therapeutic measure beneficial in the ordinary forms of bronchial affections, there is no substantial reason that can be urged for its adoption in those cases of influenza occurring in the form of an epidemic. On the contrary I have the authority of Dr. Watson for discountenancing the use of the lancet in this disease. He says: "The chief risk of mistake is that of being too busy with the lancet. Certainly those afflicted with this disorder can not bear active depletion. If you find that the inflammation has extended to the pleura or substance of the lungs, it may be necessary to open a vein or to apply cupping-glasses over the chest, but this is a *very unpleasant necessity*. Such is the result of all I have seen in this epidemic, and such is the result of the recorded experience of nearly all previous epidemics."

In regard to any other modification of treatment, necessary to its epidemic attachment, I have only to say of this as of all other epidemics, about the operation of which we are manifestly in the dark, that so far as any special treatment, having reference to this character of the disease, is concerned, "the chief risk of mistake is that of being too busy," and can therefore only refer to what I have already said in reference to treatment, with this single remark, that you should be governed in all cases of this kind by general principles.

LECTURE XLIII.

LOCAL DISEASES—CONTINUED.

Chronic Bronchitis: Modifications; Symptoms; Remarkable case; Supervention acute symptoms; Physical symptoms; Prognosis; Treatment; Emetics; Purgatives; Tonics; Diet; Chalybeates; Restorative bitters; Bathing; Palliative for cough; Counter-irritation not reliable; Exercise important.

CHRONIC BRONCHITIS.

There are few diseases exhibiting a greater variety of modifications than chronic inflammation of the bronchial mucous membrane. It is often found with symptoms of a very mild and simple character, and progressing from this to the most grave and obstinate disease, finally terminating in true phthisis pulmonalis or consumption. In its mildest form it exhibits little else than a simple irritation, evidenced by a tickling troublesome cough, accompanied by little or no constitutional disturbance, and often subsiding on the approach of warm, uniform and pleasant weather. But in its more severe grades, it becomes a disease of a more serious character, involving the general health of the patient, who gradually sinks under the protracted and debilitating malady, until finally the constitution is undermined, the patient exhausted and emaciated, exhibiting all the symptoms of consumption, with hectic fever, night sweats, and a most rapid, small and weak pulse. During the rise and progress of this disease, whether it be of a mild or more severe character, a copious expectoration of a yellow, greenish or whitish appearance and in some instances streaked with blood, will be found to exist.

The cough associated with it often occurs in severe paroxysms, and in some instances exhibits well-defined evidence of a spasmodic character as evinced by the stricture, the wheezing sound, and the hurried and oppressed respiration. In most cases the pulse will usually be found more or less excited, though not so rapid as in chronic disease of the lungs proper. Nor are the other important functions of the body performed with that regularity which characterizes a healthy state of the system. The skin will be

found dry and husky, especially in the early stages of the disease, the urine scanty and high-colored; in most cases the digestion is impaired, the tongue will be found coated in the morning, and the bowels either costive or unnaturally relaxed. In some cases also, the mucus, which is thrown up in large quantities, emits a very offensive odor, arising in some measure from the vitiated condition of the system, growing out of the long-continued morbid action of the secretory organs. Where this spasmodic character of the cough, with those phthisical phenomena above referred to, are found to exist, the patient is troubled with shortness of breath, and hurried and difficult respiration after any considerable exertion. As the disease progresses, all the symptoms become aggravated; the pulse more frequent and small, the respiration more hurried and oppressed, accompanied by a rapid emaciation. Usually associated with febrile symptoms are evening exacerbations and night sweats. The expectoration also becomes more copious, often exhibiting the most unequivocal evidence of real pus, with other peculiar appearances.

A most notable instance of a singular and unique character occurred a short time since in my own practice. The person referred to would usually sleep very easy a number of hours in the latter part of the night and during the early part of the morning; but regularly for months together on getting up expectorated a large scale of mucus, dry and concrete on one surface of it, while the other exhibited a considerable amount of muco-purulent secretion, bearing the appearance of having been discharged, or thrown off, by the effort of coughing, from the surface of an ulcer of considerable extent, and appearing as if it had been dried by the constant passage of air over it. This occurred once in twenty-four hours, and that regularly on rising in the morning. Nor was there much chance to mistake its origin, since it was always preceded and followed by a very severe and protracted cough.

From all the general appearances and symptoms presented it would have been difficult for me to have escaped the conclusion that the case was one of consumption, had it not been for my familiarity with the general and minute physical phenomena characteristic of chronic bronchitis alone. In fact it had been pronounced by a number of physicians, who were not, in all probability, familiar with the physical symptoms of this disease, an incurable case of phthisis pulmonalis, but the issue clearly proved their error.

Not unfrequently during the progress of the chronic form of

this disease, symptoms of a more *acute character occur*, that may require a slight change in the general course of treatment differing from that which the nature of the disease in protracted cases usually suggests.

Diagnosis.—The physical symptoms growing out of this disease, are striking and well defined; and to a person familiar with this mode of investigating disease, afford clear and conclusive evidence of its character. In fact, the combined symptoms proceeding from a physical examination are alone to be relied upon in determining its characteristics. For while we may have more or less of the mucous râles, mingled with the sonorous and sibilant, the vesicular murmur will not be less apparent, but perhaps may be somewhat increased, and indications of healthy action in the parenchymatous substance of the lungs will be observed. In addition to this, a clear resonance upon percussion will be observed, a resonance neither of a dull, flat, nor obscure nature, nor that increased resonance which characterizes abscesses or cavities in these organs. With these symptoms, it is difficult for one familiar with the phenomena presented by these physical explorations to escape the conclusion that they present a case of this description.

Prognosis.—With all the alarming symptoms which a casual observer would naturally attach to these cases, and with all the unfavorable appearances that we often find them presenting, it is a disease, which with proper treatment, is generally of a medicable character. In this I may differ from many members of the profession, as I am very well convinced I do, seeing that I predicate my opinions upon an essentially different course of treatment from that pursued by them. For while all those cases associated with a dry skin and somewhat febrile pulse, have usually been treated as presenting inflammatory symptoms, requiring a general course of moderate depletion or general antiphlogistic measures, I have uniformly found that a general restorative and corroborating treatment gives far more prompt and permanent relief. And though it may in some cases be found necessary to suspend the more directly stimulating measures for a day or two, direct depletion is always highly improper.

It becomes all important therefore, to know the exact ground you occupy, to scrutinize with the utmost vigilance every symptom presented in the case, that you may, with the greatest degree of certainty, determine the real character of the disease, and the condition of the organs involved. A physician's reputation often

depends as much upon his ability to foretell the issue of a case, as on any skill he may manifest in the progress of its treatment. It will therefore be perceived, especially in this form of disease, that it becomes a matter of great importance to correctly understand the diagnostic symptoms by which it can be recognized. I have already, I trust, said sufficient under the head of diagnosis and symptoms to insure this purpose. We will therefore pass on to the consideration of its treatment.

In the *treatment* of many cases of this disease, the occasional administration of an emetic is one of the most important and efficient remedies that can be recommended; for though I by no means desire to be understood as recommending the indiscriminate use of emetics in this or any other case, yet there are occasional cases of this character, presenting symptoms clearly pointing to the salutary influence which may be expected to result from the operation of this kind of remedy. Those cases more especially connected with derangement of the stomach, and exhibiting those marked symptoms of a phthisical and paroxysmal character, will be manifestly benefited by the operation of full and free emesis.

It becomes also a matter of some importance, in looking into this class of remedies, to select those that operate with mildness on the system, and at the same time with sufficient energy to fulfill the indications desired. An infusion of one-half an ounce, each, of lobelia and eupatorium, in a pint of water, given in table-spoonful doses every ten minutes, until its full and thorough influence is felt upon the system, should be administered. It has this especial advantage over most other emetics, that it will not continue to operate longer than you continue to administer it. It becomes necessary therefore to repeat the doses until the contents of the stomach have been evacuated, when its general influence will be apparent. In addition, lobelia appears to exercise, to some considerable extent, a specific influence upon the mucous membrane of the bronchial vessels. Hence, in most cases, after its operation, a more copious, free and easy expectoration is sure to follow, which will be found to exercise an important bearing upon the ultimate removal of the disease. This, together with its influence upon the stomach, as well as upon the general system, exciting, as it does, to a more healthy and vigorous action, points most clearly to the advantages to be derived from its operation.

From its general influence in the cases above alluded to, where it seems to be indicated, a single emetic should not be relied upon,

but it will be found decidedly beneficial to administer it once a week, or once in two weeks, until a more healthy and vigorous condition of the system shall be manifested.

Though I by no means recommend frequent or even thorough purgatives in the treatment of this disease, it often becomes a matter of importance that a mild cholagogue aperient should be resorted to; not in sufficient quantities to produce decided purgative action, but merely to keep up an aperient influence, and at the same time secure a more healthy and natural condition of the glands concerned in digestion. For this purpose a pill composed of one-fourth of a grain of podophyllin and one grain of leptandrin, with sufficient of the extract of tarax. to form a mass, should be administered every two or three nights, as the case may require. Associated with and following these two classes of remedies, a genial tonic and restorative course of treatment should be pursued.

In those cases of an extremely debilitated character, where any considerable portion of direct stimulants can not be readily borne, I have found it answer an excellent purpose to make use of ale, porter, or brown stout, giving it during meals, diluted with water and with the addition of a little sugar, where it is necessary to prevent or weaken their stimulating effects.

As regards the diet, it should be as full and nutritious as the circumstances of the case will permit; while the use of those medicines, which tend directly to enrich the quality of the blood, especially the saline and ferruginous preparations, should be freely allowed. An off-hand chalybeate is readily prepared, by the addition of ten or fifteen drops of the muriated tincture of iron to a solution of ten or fifteen grains of the carbonate of soda; it may be given in two tablespoonfuls of water with a little sugar, three times a day. I have found this to be a very excellent tonic; or for a change, the muriated tincture may be given alone, in similar doses at first, but gradually increased to half a drachm.

As the patient becomes somewhat improved, and able to bear a more general stimulant and tonic course, the comp. tinc. of tamarac will fulfill all those indications, better perhaps than any other preparation known. At the same time it acts as a mild and gentle aperient, and stimulates the liver to perform its healthy functions. It will be found also to act directly on the urinary secretion, increasing the amount considerably. It possesses also diaphoretic properties, by which the dry and unnatural condition of the skin will be changed.

I have often found associated with this disease *fever of a malarial* character. This can with great certainty be relieved by the use of quinia and iron, so often heretofore referred to. Nor should this prescription be at any time neglected, where the evidence of its necessity exists, on account of any irritability which the case, in other respects, may present. We should not be deterred from its free and full administration in view of any inflammatory symptoms, or of a high febrile state of the system. We should at all times introduce it at that period of the disease when these symptoms are least manifested; or in other words, during the remissions, which suggest the propriety of its use. In addition to its controlling influence over the various grades of febrile disease characterized by periodicity, it will be found to have a very salutary influence in assisting to repair the derangement of the blood, and to restore healthy action to the general system.

The condition of the skin is a matter that should never be overlooked in the treatment of all chronic diseases, and in those of the mucous tissues it becomes of more importance than in any others with which we have any acquaintance. Its immediate connection, or rather continuity, with the mucous surfaces bespeaks for it more attention in these affections than in most others of a chronic nature.

If the patient be much debilitated, frequent saline, warm pediluvia, and bathing of the entire surface with broke-water and whisky every night on retiring to rest, accompanied with brisk frictions, should never be neglected. After the patient's strength is somewhat restored, and a more healthy and vigorous capillary circulation brought about, a shower-bath in the morning, or sponging the body with cold water, will be found to exercise a very beneficial influence in the curative process of this disease.

As a palliative to the troublesome paroxysms of coughing, as well as to afford more quiet and comfortable sleep at night, a sirup of sanguinaria and eupatorium with equal parts of paregoric may be prescribed as often as may be necessary for the case; or as a substitute, I have occasionally used the sirup of the tincture of tolu and senega, with small portions of morphia, taken under similar circumstances with the last-named remedy.

In some of these cases connected with scrofula, I have seen decidedly good effects accrue from the persevering use of liberal doses of cod-liver oil. This may be given conjointly with those remedies before recommended, to fulfill the other indications.

In cases where it becomes requisite to administer some quieting

measures, and where the functions of the liver are decidedly involved, I have found the free use of iodide of potass. alcoholic extract of macrotys and hyoseyamus, to answer an excellent purpose and add much to the rapidity of the cure. The hyoseyamus removes the peculiar irritability of the mucous surface in general, and that of the bronchial mucous surface in particular. In many cases this preparation can scarcely be dispensed with.

You will find recommended in most of the authorities, counter-irritations upon different parts of the chest; but as far as my own experience has gone, I must say I have never found the advantages which I had reason to expect from such appliances. I have therefore mostly abandoned such applications, and trust to general bathing, associated with friction, as affording more sensible relief in all such cases. In diseases of the lungs however, counter-irritation will be found decidedly advantageous.

During the whole progress of the treatment, a nutritious, healthy and digestible diet should not only be allowed, but particularly recommended. I do not desire to be understood as meaning those high-seasoned and indigestible dishes which are so common to epicurean tastes; but a moderate use of plain animal food, such as beef, chickens and fowls of most descriptions; also, potatoes, rice-pudding, milk, eggs, etc.

It is a matter of great importance, that the patient should be urged to exercise in the open air as much as his strength will permit, and also that his sleeping apartment be large and airy, and warmed with an open fire.

[The following has proved to be a highly salutary measure in many cases in which I have employed it:

R Pure nitrate of silver pulv., grs. v. to viij.

Dry white sugar, pulv., ℞iss.

Mix and rub well together in a glass mortar.

Place two or three grains of this powder into a glass tube having a caliber about the size of a goose's quill. Let the patient discharge all the air he can from his lungs; then place one end of the tube far back upon the base of the tongue and direct him to close his lips upon the tube and quickly draw his breath through it. By this means the nitrate will be sprinkled over the surface of the larynx, trachea and bronchial tubes.

The operation should be repeated two or three times a week. S.]

LECTURE XLIV.

LOCAL DISEASES—CONTINUED.

Pleuritis: Characteristic symptoms; Location of pain; The cough; Associated fever; Physical signs,—Before effusion, After effusion; Other modes of diagnosis; Autopsy; Cause; Diagnosis; Prognosis; Treatment; Evils of blood-letting; Quotation from Magendie; Same author on antimonials; Emetics may be useful; Cupping; Cathartics; Sudorifics; Antiperiodics. Chronic Pleurisy: Character; Treatment.

PLEURITIS, PLEURISY, OR INFLAMMATION OF THE PLEURA.

This disease is rarely found otherwise than as it is associated with inflammation of contiguous tissues. In this connection it frequently occurs, and often without being recognized. It usually commences with a chill more or less protracted and severe, and is followed by febrile reaction, generally proportioned to the extent of the disease.

The *characteristic symptoms* are a sharp pain in the side, and in most instances a dry, short cough, with quick and hurried breathing and general febrile indications. Pain is one of the most uniform symptoms, and in fact may be considered diagnostic. It may occur simultaneously with, or after the chill, and in some rare instances even before its development. It is of a severe and lancinating character, and has been compared to the thrust of a sharp instrument. It is sometimes vulgarly called "stitch in the side," and is usually confined to a single portion of the side, not unfrequently occurring in the mammary region, though it is by no means peculiar to that part. The membrane which is the seat of this disease lines the cavity of the chest, and is reflected over the entire surface of the lungs, and, though some portions of it are more obnoxious to inflammatory action than others, yet in some instances it becomes inflamed throughout its whole extent.

Tradition gives to this disease a *location* exclusively in the left side, while the authority of the books is in favor of its more common occurrence in the opposite side. In my own experience I have most frequently found it located below the point where the

authorities mainly direct us to search for it. The pain is generally increased by respiration or upon coughing, and hence a constant effort will be observed to suppress both of those movements. It will also be increased by lying on the affected side, and persons afflicted with the disease generally lie on the side not affected. The occurrence of effusion necessitates a change of position, and when this takes place it is remarked that patients lie on their backs.

The *cough* may be, and is in the early stages, especially in those cases confined to the costal pleura, entirely absent; but as the disease progresses, and a portion of the periphery of the lungs becomes involved, a dry, hacking cough, accompanied at its commencement with little or no expectoration, is developed. If however, the inflammation extends to any considerable portion of the substance of the lungs, the cough will be accompanied with more or less mucous discharge, and should it extend to the bronchial mucous membrane, the secretion thrown off will usually be streaked with blood. The breathing throughout the whole case is more or less difficult, hurried, and embarrassed. As I have already remarked, there will be a constant effort to suppress the expansion of the chest as much as possible, and we observe under such circumstances what is called the abdominal respiration. Hence the breathing is short and rapid, and though the pain may be diminished in severity, the force of the disease goes on unabated. This arises from the compression of the lungs resulting from effusion in the pleural cavity, or from the structure of the lungs becoming inflamed.

The *associated fever*, has generally in this country too much of a periodical character to admit of doubt that it is greatly modified by the malarial influence usual in other diseases, and consequently is not entirely dependent upon inflammatory action. Hence you will observe in most cases distinct and well-defined morning remissions and evening exacerbations. Derangement of the secretory functions also, and loss of appetite, furred tongue, dry skin, scanty and high-colored urine, and a torpid condition of the bowels, are the general concomitants of this disease.

The *physical signs* become a matter of considerable importance in forming a correct and satisfactory diagnosis. If the disease occurs in its pure and uncomplicated form, as it does occasionally, the physical symptoms arising out of it can be relied upon with great certainty to indicate its true character. It is most generally however, associated with more or less disease of the substance of

the lungs and its mucous investment. When this is the case, the phenomena above referred to becomes less pointed, in their character, and not so much to be relied upon as in some other forms of disease of the chest.

In its *early stage*, before excessive effusion has taken place, or the substance of the lungs has become diseased, percussion is quite clear and resonant, and very little change is observed in the respiratory murmur, though a slight diminution will usually be recognized, more particularly on comparing the healthy with the diseased side. This is not supposed to result from actual disease of the lungs, but from the diminished force with which the air passes into the minute cells, produced by the imperfect effort made for this purpose. But as the disease progresses, and the surface of the lungs becomes involved in the inflammatory action, a slight effusion of coagulable lymph soon follows, which readily becomes inspissated and concrete upon the surface of the serous membrane. At this period another sound is said to be recognized, called the friction sound, which from its peculiar character, I imagine results from other causes than those generally assigned. This sound is of a quick, jerking character, and from some developments met with in my own practice, I am well convinced results from a partial obstruction in the air-cells on the periphery of the lungs, and I apprehend that this will equally explain the grating movement said to be felt on the application of the hand to the side, it being the same kind of jar communicated by the condition I have supposed to exist. Some authors deny its existence altogether, and others say it is produced by pressure upon the chest, by a tumor in the lungs, or serous accumulations between old adhesions existing in the chest.

If *effusion* takes place, the healthy resonance, which is so readily recognized under other circumstances as clear and distinct, becomes dull or flat on percussion, which can be better appreciated by comparing the opposite sides of the chest. The dullness will be in proportion to the extent of the effusion until it becomes perfectly flat. This will vary however, to a considerable extent, according to the position of the patient, as the liquid shifts to the most dependent part, and thus leaves that portion of the lung which, under other circumstances, would show evident signs of embarrassment and obstruction in an apparently healthy condition, so far as this sign is concerned.

All these phenomena, unless investigated with the most minute attention, will be found greatly embarrassing to the young physi-

cian. Exceptions however, will occasionally be found. In those cases where adhesion exists between the pleural surfaces, by which the fluid thus formed is retained in a more circumscribed situation, the changes above referred to will not be observed. The respiratory murmur also diminishes with this increase of effusion, and may entirely cease where the effusion is extensive. But under such circumstances, though the respiratory murmur be entirely obliterated, the bronchial sounds will be found to exist. When the disease exists only on one side, and consequently involves only one of the lungs, the respiratory murmur will be somewhat increased on the opposite side, and in some instances the sound even becomes puerile. In the early stage of effusion, when it has taken place to a limited extent only, and when but a small stratum is between the lungs and the wall of the chest, that quivering and bleating sound of the voice, denominated ægophony, may be distinctly heard. But as the effusion increases, this sound gradually becomes less distinct, until at length it ceases entirely. A great diversity of opinion exists in regard to the amount, thickness or depth of the fluid, when this result is brought about; but it is very clear that, whatever may be the extent of this accumulation, it will not destroy though it does modify the sounds in the large bronchial tubes.

In addition to these evidences resulting from auscultation and percussion, there are others of some importance which ought not to be overlooked, derived from the *shape of the chest* and the relative position of the parts within it. When the effusion is extensive, producing great obstruction, or annihilation of the functions on one side, while the other is free and unembarrassed, a distinct and sensible difference in the shape and appearance of the two sides will be observed. While you will perceive a clear and distinct movement of one side, somewhat increased above its natural state, you will recognize no movement of the other side. In addition to this, displacement of the heart will readily be recognized by the application of the hand, and displacement of the liver will also be readily discovered.

The *autopsic* developments, growing out of and connected with this disease, can readily be inferred from what has already been said on the physical phenomena. In all cases a marked increased redness of the membrane will be detected, and adhesions resulting from the plastic effusions, so common in inflammation of the serous tissues, will often be found. In almost all of these cases which

terminate fatally, more or less of effusion will be found through a greater or less extent of the pleural cavity. This effusion differs somewhat in its character according to the circumstances of each case. In some instances it is of a yellowish, limpid character, while in others it becomes somewhat dark and inspissated, being mixed with flocculi of an albuminous semblance. Then again it is found to be more turbid, and occasionally exhibits a distinctly bloody character, like the washings of blood from meat, while in other cases you will see a distinct appearance of purulent matter, which has all the properties of pus. As already remarked, whatever the character of the fluid may be, if it is not circumscribed by adhesion existing between the costal and pulmonary portions of this membrane, it will be found flowing or changing its position in the pleural cavity according to the movements of the patient. When there is excessive accumulation, the lung of the affected side will be forced from its normal position, and somewhat compressed. This, however will depend upon the extent to which the effusion has gone. In some instances the lung is completely compressed, so as to be almost entirely flattened, and resting against the mediastinum. Differing from most other structures in a state of inflammation, this membrane will be found but little thickened, and not materially changed. It will however, be somewhat swollen, in consequence of the effusion in the cellular tissue being in immediate contact with it, or under it. In addition to this, a kind of false membrane is sometimes observed on its inner surface, from which it can readily be removed. In those speedily fatal cases which are occasionally met with, a gangrenous condition of the surface of the lungs will be found to exist, and in such cases, contrary to the general character of effusions, a very unpleasant and offensive odor will be perceived. The effusion growing out of, or connected with, this disease is gradually absorbed, though it may exist for a long time before this is accomplished. It is this effusion, in the chronic form, that constitutes what is usually denominated hydrothorax.

The most common exciting *cause* of inflammatory disease of the different parts or organs in the cavity of the chest is exposure to changes of temperature. More especially is this the case when the system is relaxed or heated by active exercise, which is then suddenly suspended. It occurs also at a season of the year favorable to the production of other inflammatory diseases. It is said by some to have been produced by excessive draughts of cold

water when the system is in a state of free perspiration. Other causes may be mentioned, which occasionally produce the disease; such as mechanical injuries, and the transfer of irritation produced by the sudden arrest of long-continued discharges, as well as the sudden disappearance of extensive eruptions upon the surface. It also occasionally grows out of the softening of extensive tuberculous formations in the substance of the lungs, near the surface in contact with the pleura. Males are said to be more liable to it than females, owing no doubt to the more frequent and greater exposures attendant upon the avocations of the former; and it is not confined to individuals of a full or plethoric habit, being quite as often encountered in persons of an entirely opposite diathesis. It occurs more frequently in the spring and the latter part of winter than at any other season of the year, and is rarely observed as having an epidemic character, though in many instances it occurs endemically.

Diagnosis.—The diseases with which pleurisy is most liable to be confounded are rheumatism or pleurodynia, inflammation of the investing membrane of the heart, and also of the substance of the lungs. In pleurodynia those peculiar physical phenomena, which have been mentioned as diagnostic of pleuritic inflammation, are entirely wanting, with the single exception of the diminished respiratory action, which in this disease is entirely owing to the want of a natural effort at respiration. In this form of rheumatic disease, which may with great propriety be called neuralgic rheumatism, there is usually also an entire absence of febrile symptoms as well as of cough. Besides, in the latter disease, we often find a very changeable character, shifting from one part to another, which is not at all the case in pleurisy. *Pneumonia* will be readily recognized by the difference in the character of the pain and of the expectoration, and the more palpable evidence growing out of percussion and auscultation in that disease that are not developed in pleurisy.

Prognosis.—Whether in its simple or more complicated form, whether of a mild or more severe character, it is a disease which by proper treatment, usually terminates favorably. But when extensive effusion takes place it becomes more serious in its nature, though even then the patient ought generally to recover. When however, it grows out of, or is connected with softening of tuberculous formations in the substance of the lungs, a favorable result can scarcely be expected; or when it is associated with excessive

disease of those organs the results will be far more uncertain. It is also much more serious in its effects upon old and debilitated persons than on those of younger and more vigorous constitutions. The formation of pus in the pleural cavity may always be regarded as of unfavorable import, and much encouragement under such circumstances can not reasonably be given.

Treatment.—The views heretofore explained in relation to the real condition of the vessels concerned in the circulation of the blood and the reasons then assigned for our general opposition to direct depletion with the lancet, in inflammatory diseases, which views and reasons are amply sustained by my own experience, as well as by the testimony of those with whom I have had opportunities for comparison, will, I trust, be considered sufficient justification for differing from nearly all the authorities in regard to the use of that therapeutic measure in this disease. For while I am entirely convinced that pleurisy can be far more successfully, and generally more promptly, treated without resorting to that method of general depletion, I am equally well convinced that the excessive effusions, spoken of by the authorities as occurring frequently in practice, result from an effort of the system to dispose of the excess of serum known to be produced by a copious abstraction of blood.

I trust that for any remarks I have made or may make, in relation either to the ordinary routine of treatment, or to the course I have myself pursued, I shall not be suspected or accused of undue enthusiasm for a merely theoretical opinion. On the contrary I advocate and recommend a course of treatment successfully employed in my own practice, and which I feel the most positive assurance will not disappoint any practitioner who properly and perseveringly applies it. I speak with confidence on this point because my opinion is founded not upon mere theory, but upon a long-continued series of observations. In the course of an extensive range of practice for upward of twenty years, in which pleuritic inflammation, in some of its modifications, has been of frequent occurrence, I have rarely lost a case, and I recollect but a single one in which effusion to any considerable extent either followed the disease, or was associated with it in its progress.

It is well known that in local inflammations, the *abstraction of blood* by the lancet tends to add to the obstruction already existing in the capillary vessels, and exerts a debilitating influence upon the *vis a tergo* of the system, thus directly adding to the difficulty

sought to be removed. And this alone is a sufficient and satisfactory objection to the use of this agent in the treatment of pleurisy or any form of inflammatory disease. But there is another and if possible still more serious objection to its use, bearing with special weight on the disease under consideration; an objection that should never be overlooked, even though the one first urged should not be deemed satisfactory. I refer to the well-established deteriorating influence that the general abstraction of blood has upon the due proportion of its component elements, upon which its free circulation through the capillary vessels essentially depends, and also to the predisposition which that measure induces to dropsical effusions in all cases where disease is located in serous tissues. The varied experiments made by the celebrated Magendie and others, on the blood of the human subject and many of the inferior animals, prove beyond question that the influence referred to is not in the slightest degree exaggerated. In these experiments it was clearly shown, that the red globules and fibrin of the blood are greatly diminished in proportion to the less important and less vital elements which enter into its composition. In other words, the serous portion is left in excess, and has by some means to be disposed of before the true and healthy balance of the system can be restored. Hence in those cases of local inflammation where the proportions of the blood have been disturbed as before stated, effusion affords a ready outlet for the disposal of the disproportion and excess of serum, and hence it is that frequent and excessive effusions are so constantly mentioned by those who think the lancet indispensably necessary, while we who adopt an opposite or different course, and have equal if not far greater success, rarely ever see a case of serous effusion to any great extent in our practice. I therefore confidently expect the approbation and final success of all those practitioners who will give the measures I am about to recommend a fair and impartial trial.

Before proceeding however, to detail those measures, I can not forego the pleasure of reading to you a few remarks made by that learned and most indefatigable teacher, M. Magendie. I quote them not as giving the practical results of the same or a similar course, but as evincing a decided distrust of the principal measure relied on by the leading authorities in the treatment of inflammatory affections. In discussing, in his lectures on the blood, the buffy coat, of which so much is said in relation to its indication of blood-letting, he remarks: "You see, gentlemen, how difficult it

is to eradicate the most absurd prejudices; in spite of the evidence of our experiments men continue to maintain that the buff is the source and origin of inflammations; in spite of their seeing us develop at will these same inflammations by depriving the blood of this same buff. You know that in each instance, where we removed a part of its fibrin from an animal by bleeding, or where we injected divers substances into the circulating system, you invariably saw the precise morbid disorders and lesions, affecting the same organs and assuming the same forms, so often seen in our hospital autopsies, produced at the exact hour foretold at the time of the experiment. And in defiance of all the information thus acquired, you would bleed in order to combat the ridiculous bugbear of pathologists, and although you are aware that it is developed under every condition of the system, both in health and disease! But, you will say, must we then prohibit venesection in pleurisy, in pneumonia, etc.? and if we refuse to employ it in such cases, what treatment is to be adopted in its room?

“Gentlemen, I will state to you with fidelity my convictions on this point. If bleeding be prescribed *because* the blood is buffy, I say that they who so prescribe it act in defiance of facts, and hence I utterly reject on this score, the propriety of its employment. But if bleeding be advised, because it relieves the patient, diminishes the oppression he feels, soothes his pain, and finally, because patients habitually recover by or rather after the use of this remedial agent, then, empiric as I am, I admit that we are justified in having recourse to it; nevertheless, I must, at the same time, declare that I can not conscientiously affirm, in the majority of cases, that the malady would not have gone through its periods, and reached a fortunate termination, had venesection not been employed. And my doubts on this head are strengthened by the fact, that if, instead of weakening your patient, you support his physical and moral strength, and watching the disease closely in all its phases, promote the occurrence of favorable crises, and assist nature (by directing abstinence from solids, and the use of diluents) in overcoming the obstacles she encounters, you frequently see rapid recoveries occur, more rapid even than those witnessed as the sequent of abundant and repeated blood-letting. The methods of treatment with which we are now acquainted, are unfit to fulfill such indications as those I have enumerated; this I am well aware of, and indeed in the present state of things, I am, as I have more than once declared, persuaded that it is wiser to stand still and do nothing, than act

as we must do so often, under the apprehension of possibly increasing the violence of the disorder. For you must remember that the treatment by blood-letting, employed in almost every case of acute disease, but especially in those I have adverted to is *one* of the means of *inducing those very diseases in healthy animals*. Bleeding lessens the quantity of fibrin, proportionally increases that of the serum, and weakens the energy of coagulation; and you are aware that whatever interferes with the coagulability of the blood, its most important quality, manifests itself by morbid alterations in the organs, whence in their turn, result a variety of serious general affections. Upon this point I feel, gentlemen, that I can not address you too impressively, for the vast deductions it directly furnishes are of a kind to operate a most useful change in the theory and practice of our art."

By way of confirming the objection to the use of *antimonials*, in the treatment of inflammatory affections which experience has suggested to me, I will read another paragraph from the same author. After having shown by direct experiment upon the living animal, as well as upon the blood out of the system, that antimony has a chemical influence upon the red globules and produces serious inconvenience and fatal results, he says; "These chemical effects of tartar emetic appear the more extraordinary when we reflect on the confidence placed in this salt as a remedial agent in certain disorders. The author of the magnificent work on mediate auscultation has filled several pages in expatiating on the advantages he had derived from its administration, especially in the disorders already named—pneumonia and rheumatism. Now, it happened that I was designated to succeed Laennec at the Neckar hospital; and out of respect to that illustrious observer, I continued the exhibition of the same preparations of antimony, and in the same affections as he was in the habit of employing them. But I must confess the results were not such as I had hoped to see them; though I had the same house-surgeon and the same apothecary as my predecessor; though every thing in short, remained precisely as he had left it, I could not satisfy myself that any very notable modification in the progress and duration of those affections was produced by the use of the vaunted drug. I consequently, after a few weeks trial, ceased altogether to employ it. You must be careful, gentlemen, about forming your opinion too precipitately respecting the efficaciousness of a medicine, because it has apparently produced a few successful results. Who can assure you that the

patient would not have recovered quite as well if you had not employed it? Rheumatism, for example, yields to bleeding, or to tartar emetic, to every imaginable kind of treatment—yields above all, to rest and diluents; in my hospital practice I never have recourse to the lancet, to tartarized antimony or to leeches, in the treatment of this affection, and yet I have no hesitation in affirming that all the cases of rheumatism I have treated have terminated favorably.”

Commending these remarks to your attention, I proceed to detail the course of treatment alluded to; and in the first place whenever this disease is in any way connected with evident derangement of the stomach, the full and efficient operation of an *emetic* will afford more or less immediate relief to all the active and urgent symptoms which it develops, and will also exercise an important influence in equalizing the circulation, and bringing about, with other means that are to follow, a speedy resolution of the case. I do not think the objection urged by some authorities against the use of emetics in inflammatory diseases, on account of the severity of local pain, offers any bar to their administration. For I have found that they do not aggravate or add to the severity of the pain, but on the contrary usually afford marked and immediate relief; and I therefore do not hesitate to administer this remedy, when it is indicated, to the extent of producing general relaxation of the system. The acetous tincture of sanguinaria and lobelia, given in tablespoonful doses every ten or fifteen minutes, aided by a warm infusion of eupatorium perfoliatum, until a thorough operation is produced, is a very valuable emetic, and can be recommended with great confidence as a safe, and sufficiently efficient remedy for all practical purposes.

In severe cases, either directly after the administration of the emetic, or before it if more convenient to the physician, the extensive application of *cups* to the side affected will not only assuage the severity of the pain immediately, but in many cases will produce more or less *permanent* relief, which ought never to be lost sight of in diseases of this description; and it will be found desirable to continue to repeat this application until the disease is entirely subdued. The small amount of blood that is usually obtained by cupping does not exhaust the vital force, nor interfere with the recuperative energies of the system, and yet the local engorgement is diminished by the direct abstraction of blood through the medium of the anastomosing vessels and the consequent restoration of an equilibrium by

diversion to the vessels on the surface. It also has a direct counter-irritating influence, which is an important consideration in many cases.

After these measures, and as soon as the circumstances of the case will permit, a thorough *hydragogue cathartic* will be found a very reliable measure in the reduction of inflammatory action. We can thus abstract from the positive quantity of the circulating fluid, a larger amount than we can safely take at one time, by means of the lancet, under any circumstances. And although this fluid is diminished in quantity, it will be found that those vitalizing elements necessary to its free and healthy circulation through the small capillary vessels, are not essentially diminished. It also produces a highly stimulating influence upon the absorbent system, and is therefore, a reliable measure for the disposal of local engorgement and serous effusion. So that, whether it be in the early stage of the disease, while the loaded state of the capillary vessels is the only abnormal condition to be counteracted, or in the more advanced stage, when effusion more or less extensive is found to exist in the pleural cavity, it can be administered with equal confidence of success, and if the disease does not yield in its early stages to these and other measures recommended, it will be important to repeat them every day or two throughout the course of the treatment.

After the free cathartic action of the medicine, a not less important and efficient means of restoring an equilibrium to the circulation and thus relieving the local congestion or engorgement, is very general and thorough perspiration, which should never be neglected in such cases. This can be more readily produced, as well as longer continued, after the serous evacuations above directed, have been completed. To accomplish this desirable object, a decoction of *aselepias tuberosa*, with a small portion of *sanguinaria*, barely sufficient to produce a slight nausea, may be freely used, and a fluid-drachm of the compound tincture of Virginia snake-root, or ten grains of diaphoretic powder, may be given occasionally with the decoction, until a general relaxation and free perspiration is brought about. It is of great importance that this condition of the system should be continued, and the measures suggested should therefore be persevered in as long as may be necessary for this purpose. In addition to this, the hop fomentation, applied to the affected side, as hot as the patient can bear it, covered entirely with a dry flannel to protect the clothes from becoming wet, and changed every half-hour or hour, will not only aid in keeping up the general relaxing influence, but will have an important local bearing upon

the disease. Thus all the great emunctories, which in almost every form of acute disorder, are essentially obstructed, and so have much to do in the production and continuance of disease, will be thoroughly and simultaneously called upon to perform their functions, not only to the extent of their healthy action, but so as to make up for their past diminished action, in their extra depurating influence on the circulating fluid. And you will rarely find a system so insensible to the ordinary calls of vital action, as not to fully respond to these powerful measures. In a large majority of cases in my practice, in which these remedies were fully tried, the disease yielded without further treatment, and this too, whether confined entirely to the pleura, or extending to the neighboring parts or organs.

But if the whole force of the disease should not be entirely broken down, and healthy action not fully restored by these measures, they should be repeated more or less as the circumstances of the case may require. Whether another emetic, or the application of cups and scarification, or a full and thorough cathartic, or a more mild cholagogue aperient, or several of these combined, should be administered, will depend, as a matter of course, on the condition of the patient and the symptoms still existing in the case.

As heretofore intimated, the febrile symptoms associated with the disease often present distinct and well-marked *periodic* character. This is very apt to be the case in early spring, and in such cases, when the febrile symptoms are at the lowest ebb, or on the decline, efficient doses of antiperiodic remedies should be given previous to the administration of any other measures, excepting perhaps, the thorough application of cups, followed by the hot hop fomentations. The antiperiodics should be continued every two hours, until a sufficient quantity is administered to insure the end desired, or until an exacerbation in the case takes place, when their further administration may be suspended, and palliative measures resorted to, such as bathing the surface freely and frequently in brook-water and whisky, the administration of an emetic if necessary, or if the symptoms are not urgent, a mild cholagogue aperient, as half a grain of podophyllin and one grain of leptandrin, until the remission again occurs. A repetition of efficient antiperiodic measures will then arrest the disease in a large majority of cases.

The existence of inflammatory action, whether in the lungs proper, or in their investing membrane, does not interfere in the least, or in any way bar the propriety of the use of the remedies

recommended for the treatment of periodic diseases, but on the contrary, all the inflammatory symptoms will often subside or simultaneously disappear with the fever. It may indeed be necessary to follow the antiperiodic measures with those active and efficient remedies heretofore directed for the uncomplicated symptoms of the disease. But the system will thus have been relieved of an embarrassing periodic disease, and will more readily respond to those measures necessary and proper for the other conditions.

In presenting to your notice views so different in many material points from those taught by most of the respectable authors, I deem it just to myself and due to you as students to remark, that I have fairly tested both methods of treatment. In my early practice I followed the treatment recommended in the books, and now in view of the results of both methods, I have no hesitation in attributing a vast superiority, both in regard to the duration of the disease and comparative mortality, to the mode of treatment which I have just described. I trust therefore, you will not consider it a mere speculation, or a vague theory emanating from a "closet-practitioner," but a theory firmly believed, practically applied, and earnestly recommended.

CHRONIC PLEURITIS, OR CHRONIC PLEURISY.

Pleurisy sometimes assumes a chronic form, presenting, as would naturally be expected from this modification of the disease, a mere amelioration of the symptoms of the acute form. When such is discovered to be the case, there are few if any measures that will be found to exercise greater and more lasting benefits than the application, over the seat of the difficulty, of an extensive irritating plaster, prepared in the usual way. This should be continued, and a copious discharge of purulent matter kept up for a number of weeks. At the same time, the decoction of *aselepias tuberosa* and *sanguinaria* should be given, partly with a view to their sedative influence and partly for their diaphoretic effect, but mainly for the diuretic action which this preparation rarely fails to produce in such cases. In connection with these measures the following prescription may be made:

℞ Podophyllin, gr. x.
 Digitalis, gr. xv.
 Squills, ʒj.

Ext. sambucus and taraxacum āā q. s. to form a pill mass.
 Divide into 20 pills. Sig. Give one every morning and evening.

If the bowels are inclined to be costive, a decoction prepared by mixing an ounce each of podophyllum pelt., apocynum can. and eupatorium purp. in a quart of water, adding a sufficient quantity of good gin to prevent fermentation, and enough sugar or molasses to sweeten it, may be given in tablespoonful doses once in six hours, and increased or diminished so as to act two or three times freely on the bowels every twenty-four hours. At the same time, eight grains of iodide of potassium may be given three times a day. These measures will rarely disappoint the expectations of the practitioner in procuring a sensible increase in the urinary secretion, as well as in stimulating the absorbents to more vigorous action, and thus gradually disposing of the effused fluid. The surface should also be freely bathed two or three times a day with ley-water and whisky, followed with brisk friction until a free capillary action is produced. By pursuing this course, the more troublesome symptoms will be ameliorated, and a more healthy action in the general functions, usually deranged in these cases, restored in a short time.

If the lungs have become involved, a troublesome cough will often be found attendant upon the disease. Great relief, in such cases, will be afforded by the use of equal parts of the sirup of sanguinaria and paregoric, given in teaspoonful doses, and repeated sufficiently often to answer the desired end. Or the sirup of the balsam of tolu with morphia may be given in the same way.

The diet in such instances, requires to be changed from the antiphlogistic character necessary in the acute form to a more liberal and nutritious regimen. Bread and milk, if the latter article usually agrees with the patient, nutritious fresh vegetables, such as roasted or baked potatoes, etc., stale bread, and in some instances, the more digestible kinds of animal food, such as venison, birds, oysters, dried fish, etc., may be allowed.

Although it is generally advisable that patients in these cases should keep very quiet, yet when an individual has previously been accustomed to active exercise in the open air, an occasional short ride may be found beneficial. And at all events, it is desirable that the system should gradually return to its wonted habits, where they have been in accordance with the laws of health.

When the accumulation is so extensive as to greatly embarrass the functions of the lungs, and especially when suffocation is threatened, recourse may be had to the operation of paracentesis. It should not be dissembled however, that the operation is generally fraught with danger, from the liability to consequent inflammation,

which sometimes follows, and is produced in part no doubt, by the passing of air into the orifice made for the discharge of the fluid. The operation is said to be more successful in cases of serous accumulations than in those in which they are of a purulent form. But this is probably referable rather to attendant complications, than to any inherent difficulties connected with the operation in such cases.

I have heretofore said, that I look upon this difficulty as of very rare occurrence, when the treatment pursued in pleuritic inflammation had reference to the true cause and pathology of the disease. But if the case was not too far advanced, nor too extensively complicated, to preclude a reasonable expectation of the success of the operation, I have no great doubt that it might be successfully treated by the persevering use of the means I have recommended. The operation however belongs to the province of surgery, and for the more full consideration of the topics connected with it, I refer you to the works treating particularly on that subject.

LECTURE XLV.

LOCAL DISEASES—CONTINUED.

Pneumonia: Varieties based on extent and location of disease; Distinctions arising from complications; Symptoms; Commencement; Progress; "Flag of Truce;" Physical signs; Favorable termination; Abscesses; Bilious Pneumonia; Typhoid Pneumonia: Diagnosis; Prognosis; Causes; Pathology.

PNEUMONIA, PNEUMONITIS, PULMONITIS, OR INFLAMMATION OF THE LUNGS.

The terms pneumonia, pneumonitis, pulmonitis, etc., are applied to inflammation of the parenchymatous or spongy structure of the lungs. We find described in the authorities, a number of modifications of this disease, predicated upon the particular portion of the lungs involved, or upon some particular part of their structure, as well as upon the peculiar conditions sometimes found to exist in them; developing, it is said, somewhat unique and striking symptoms during its progress. That we frequently find many and great modifications dependent upon associations with other diseases, or with diseases of other organs, is very true. But although I do not desire to undervalue minute scientific research, I have not been able to appreciate, and am frank to admit that I have great doubts, whether it is possible to recognize, during its progress, any physical phenomena which will enable the most careful observer to distinguish the minute shades of difference that are said to characterize and constitute some of these distinctions; and although others are apparent and plain, yet they have so little if any practical importance, that I shall barely refer to them in the remarks I propose to make in regard to this disease. There are however, distinctions that require to be observed, in which a corresponding modification of treatment is indicated.

In what is called *lobar pneumonia* the inflammation is continuous, so far as it extends. It may occupy a part of a lobe, an entire lobe or a whole lung. Both lungs may be inflamed at the same time, in which case it is called *double pneumonia*, which may at the same time be lobar in its character. But when the disease is circumscribed

by the boundaries of the lobules, occurring in distinct portions with healthy structures between, it is called *lobular pneumonia*. The inflammation may, it is said, be confined to the lining membrane of the minute air-cells of the lungs, producing symptoms that are supposed to be peculiar in their character (of which however, I have great doubts), called *vesicular pneumonia*. Again, it is said that the cellular structure, intervening between the minute air-cells becomes the seat of distinct inflammatory action, and is hence called *intervesicular pneumonia*. These two latter distinctions have, in my opinion, no particularly important bearing in any respect, whether as influencing the treatment or termination of the case; especially since there is great doubt whether their independent existence can be recognized at all; and I therefore see very little necessity for retaining them. When the investing membrane of these organs becomes inflamed in the progress of the case, developing symptoms somewhat peculiar, it is then called *pleuro-pneumonia*.

Other distinctions, based upon the *symptoms* occurring during its progress and dependent upon *diseases of other organs*, have an important practical bearing, which I shall have occasion more particularly to refer to hereafter. I refer now, to what is called bilious and typhoid pneumonia. When inflammation of the lungs is the original disease it is called *primary*; when it is superinduced by the existence of disease in other organs or results from other diseased conditions of the system, it is called *secondary*. As occurring in this country, within the range of an extensive experience, I have rarely found it in its primary or unassociated character. It is frequently observed with a low and depressed condition of the system, developing what is usually called typhoid pneumonia; but, perhaps the most common form met with is that which is usually termed bilious pneumonia, in which more marked and well-defined symptoms connected with derangement of the liver are found to exist, and in which the associated fever is distinctly periodical in its character. We find it also, in almost every variety of grade that can possibly characterize any disease affecting the human system.

This disease, especially in its bilious associations, is often preceded by most of the *symptoms* characteristic of malarial fever, for a number of days previous to its complete development. In such cases, the patient is usually oppressed throughout its progress, with troublesome neuralgic pains in the back and extremities. It

usually ushered in by a distinct chill, often of a protracted and distressing character, which will be followed by more or less febrile reaction, dependent somewhat in its severity or extent, upon the temperament of the patient and his constitutional peculiarities, as well as the extent of the local disease. In many old and debilitated cases, reaction never takes place to any considerable extent, and during its whole progress, the case will be found to exhibit a low and exhausted condition of the system, accompanied with a small, feeble and frequent pulse, and cool skin. In some instances, it is preceded for a number of days, by the ordinary symptoms resulting from cold or catarrh, developing at length well-defined inflammation of the substance of the lungs. In most of those cases affecting healthy, robust and vigorous constitutions, the reaction will be more complete, and the febrile symptoms will be of a higher grade and more violent in their character.

Pain in the chest, greatly aggravated upon coughing or upon full inspiration, but of a more dull and obtuse character than is connected with pleuritic inflammation, will be found associated with it, commencing often with the chill, and continuing frequently, throughout the existence of its active state. The location of this pain, will depend of course upon the particular part of the lungs involved, and will be to a certain extent commensurate with the disease. Respiration is always hurried and generally accompanied with considerable oppression, especially manifest upon an effort to speak, or during paroxysms of coughing. This may be considered one of the characteristic symptoms of inflammation of the substance of the lungs. While in health the number of respirations averages about eighteen per minute, in this disease the number is frequently increased to forty and upward, and is sometimes greatly disproportioned to the other symptoms of the case.

The *cough* varies exceedingly in different cases, no doubt depending to a great extent, upon the particular structure involved, but more particularly upon the amount of irritation that exists in the case. It may however, be considered as a universal symptom, is often productive of severe pain, and will in many instances be suppressed if possible.

In those cases of a more marked congestive character, there will be observed only a slight cough, but on the return of the circulation to its more natural condition, and consequent admission of air more freely into the minute cells of the lungs, more or less of a troublesome cough will appear, and often become a matter of considerable

anxiety to those who have watched the progress of the disease. It may not however, be considered an unfavorable symptom, especially if there is with it a decline of febrile action.

The *expectoration* in the early stage is frothy or bubbly, but it shortly becomes highly tenacious, and more or less streaked with blood; exhibiting in some instances a bright florid appearance, while in others it is of a darker and more venous character. In those cases where the physical symptoms indicate a greater degree of congestion, the sputa will exhibit a rusty appearance; while in those of a more purely inflammatory character, the expectoration will be more florid and bloody, and sometimes a considerable quantity of pure, fresh blood will be thrown off.

During the progress of severe and violent cases, we occasionally find a "flag of truce" is presented, by which the unwary physician is very apt to be misled. Under such circumstances, the expectoration becomes opaque, and more copious, and the lips break out extensively with what is usually termed fever or "cold" blisters, and this symptom often accompanies a real decline of the disease, but it may indicate, under such circumstances, a rapid *fatal* termination of it; and though it is usually, in the case first referred to, accompanied with a cool and slightly moist surface, and a more comfortable and natural feeling of the patient, you will nevertheless, generally observe a continuance in the frequency of the pulse, and very little change in the frequency of the respiration, all of which taken together, I have been too often admonished, points to a severity in the case that is always indicative of uncertain results. In short, I look upon it as one of those palpable but unsuccessful efforts to throw off diseased action which nature sometimes makes. Under such circumstances, it will be observed that the expectoration soon again becomes more scanty and frothy in its character, the eruption on the lips and face dries up, and all the symptoms become more aggravated.

As already remarked, the accompanying fever will be found greatly to vary in its violence and character. In some instances it will be of a very high grade, accompanied with severe headache, great heat of the body, a flushed face, and circumscribed redness on one or both cheeks, which I have uniformly found to correspond to the lung affected.

The fever in most cases, will be found of a distinctly remittent character, having those peculiar morning remissions and evening exacerbations, associated with a severe pain in the head, limbs and

back, that are more particularly characteristic of autumnal remittent fever. In my early experience, all such cases gave me much trouble, as I found them more tedious and protracted in their progress. But under the course of treatment I have of late pursued, and shall recommend, I have found them to yield with great promptness, and with almost entire success.

Patients laboring under this form of disease, will usually be found lying on their backs, or on the opposite side from that in which the disease is located, unless the pleura is extensively involved at the same time. In most cases, the tongue exhibits a loaded or thickly-coated appearance, and in those cases influenced by bilious modification, it has a decidedly yellow hue. The pulse is usually full and forcible, but not very frequent. The bowels, in the early stage, are generally costive, but are apt to become quite sensitive, easily operated upon by cathartics, and often attended by a disposition to diarrhea. The urine is always scanty and high-colored, and in those cases associated with torpor of the liver, it will be changed to a yellowish-brown color; which appearance I have always watched with great anxiety, as exhibiting the earliest symptom of a decline in the disease; for though you may not discover any particular change in the general or physical phenomena connected with the case, if you find the urine on cooling deposits a sediment, you may look with great confidence for a decline in the more palpable symptoms of the disease soon to follow.

Though the general symptoms which inflammation of the lungs usually develop, are to a considerable extent diagnostic in their character, and may with some confidence be relied upon, the physical signs connected with it are more than paramount, and should never be neglected, more especially, that we are occasionally presented with a case in which the more ordinary symptoms are absent, and in which the physical signs alone are to be relied upon as pointing to the condition of the organs. Physical examination is also a matter of much importance in the treatment of this class of diseases, when occurring in children, since the ordinary appearances can not or will not be found to exist. The expectoration will not be thrown off, and pain in the side, unless very severe and acute, will not be manifest.

Percussion, in the early stage, does not yield that satisfactory evidence which at a later period it affords, yet in connection with the phenomena of auscultation becomes important. In the early stage, before the substance of the lungs becomes engorged, and the

air-vesicles obstructed, very little dullness will be observed, and it is only by the most careful comparison of the healthy and diseased sides, that any difference will be detected. But a careful auscultation, either by direct application of the ear, or through the intervention of the stethoscope, reveals with great certainty the real extent and nature of the disease. The healthy and distinct vesicular murmur, which characterizes the passage of air into the healthy lung, even in the earliest stages of this disease, gives place to the crackling crepitant sound, or a commingling of it with the natural murmur; which shows beyond a doubt that the disease has not progressed to any considerable extent. At this stage, it may require a more full inspiration to develop clearly this state of the case. It may be confined to a small portion of the lung, or it may extend to a large portion of it. In this case, an examination of other parts will enable you to make the contrast with great satisfaction and certainty; for while you may hear the healthy respiratory murmur characteristic of healthy action in one part, a nearer approach to the point of disease will develop the puerile sound, while further onward you will be able to distinguish the distinct crepitation first referred to. But as the disease advances, those portions of the air-cells of the lungs which are in a diseased condition, become temporarily obliterated. The high state of irritation which produces the dry or crackling râle, favors a plastic secretion into the intervesicular cellular structure, which together with the pressure of the engorged vessels, and the imperfect effort at full inspiration, closes up the minute cells, and dullness on percussion will be the consequence. If this state of the case extends to a large number of those cells, and the substance of the lungs is considerably involved, no sound will be heard except that of a bronchial character, which may be of a sonorous, sibilant or mucous quality. If this obstruction extends to the larger bronchial tubes, there will be excessive dullness on percussion; and the peculiar loud bronchial respiration, which I have known to be mistaken for a cavity, will be evident. Besides the bronchial respiration, there will be recognized a strong vocal sound, or a kind of resounding or reverberation of the voice. This vocal resonance is not produced in health, because of the loose and spongy structure of the lungs; but the consolidation of these structures in disease forms a ready medium of communication, which is quickly recognized, and produces what is called bronchophony. This sound can be heard by causing the patient to

answer a question while you are listening, with the stethoscope or the ear on the part involved in disease. Besides this peculiar symptom, we have another pointing to the same condition. By placing the hands smoothly upon the patient's chest, while he is speaking, a very distinct vibratory or jarring sensation will be communicated to them.

I have thus given you the general, and to some extent, the more minute symptoms that characterize this disease, as well as the physical phenomena connected with its various stages. I have endeavored to note more particularly, those symptoms which may be considered diagnostic, and have perhaps omitted many which can be found enumerated in detail in the authorities.

If the disease declines, either from appropriate treatment, or the natural efforts of the system, in its early stages, you will find a corresponding decline in the general symptoms characteristic of it. The crackling sound which is peculiar to the early stage, will give place in a very gradual manner, to the healthy vesicular murmur present in healthy lungs. Accompanying this, will be a more free expectoration, more or less changed in its character from the transparent, frothy or bloody appearance which it exhibits in the commencement of the disease, to that of a more thick, opaque and copious character. But where the disease has progressed until a complete engorgement or hepatization of the lung has taken place, developing the dullness on percussion, the bronchial râles, and the peculiar sound presented by vocal auscultation, then, as it declines, we shall have a profuse mucous secretion, accompanied by the heavy mucous râles, a gradual decline of the bronchial sound, and a simultaneous gradual return of the healthy murmur, associated with the crepitant or sub-crepitant sounds of the early stage. Under such circumstances, we may expect to find a corresponding decline of all the symptoms of active disease which have been described as associated with it. The hot and parched or dry state of the skin will give place to a more moist and cool condition, the pulse becomes less frequent, more full and soft, and the urine deposits a copious sediment on cooling. I watch with considerable anxiety the urinary secretion as affording the earliest symptom of an amelioration in this disease; and where I find a copious deposition to have taken place in this secretion, I look forward with considerable confidence to a speedy favorable termination.

But the disease may progress and develop another train of symp-

toms, somewhat peculiar in their character. I refer to the formation of an *abscess*; which may take place to a greater or less extent, and finally be discharged into the cavity of the pleura, or by taking a contrary direction and communicating with the bronchial tubes, be discharged and thrown off by expectoration. The matter of these abscesses, is of course, circumscribed by the inflammatory adhesion of the cellular tissue about the cavity, preventing it from being diffused throughout the substance of the lung. Where an abscess has existed and been discharged, leaving a cavity, we find those physical phenomena called pectoriloquy and cavernous respiration, and often associated with a gurgling sound in those cases where it is not freely discharged. We shall also have, upon percussion over the cavity, an increase of the resonance, that will be readily observed by comparing it with the healthy lung. It does not by any means follow, though cavities of considerable extent are formed in the substance of the lungs, that the case should necessarily prove fatal; for though this may be true in the majority of cases, we have the most satisfactory evidence that it is not always so. The matter contained in these abscesses being discharged, sometimes adhesion of the walls of the cavity takes place and the patient recovers. This is far more likely to be the result in cases of a purely circumscribed inflammation, unconnected with tuberculous formations, as in the former case, we have a probable exemption from a recurrence of the difficulty, while in the latter, we have nothing else to expect but a continued repetition of the same results. It is undoubtedly true, that lesions of the structure of the lungs do not heal with the same readiness and certainty that most other tissues of the system do; even when unconnected with other diseases. This is in part, owing to the constant change that is liable to take place in a cavity thus formed, by the frequent expansion and contraction which respiration necessarily produces. But where there is considerable adhesion in the cellular tissue surrounding the abscess, the difficulty is measurably removed and a union is more likely to occur. If the accumulation of pus is extensive and points to the pleural cavity, and discharges there without an opening through the walls of the chest, by which its exit may be made, inflammation of the membrane is certain to follow, and the patient finally sinks in a state of suffocation. But where adhesion takes place between the two pleuritic surfaces, and the abscess points toward the surface, through the intercostal spaces, and is there evacuated, then, as previously remarked, if the inflammation is

circumscribed in its character, adhesion of the walls of the abscess may follow and the patient recover.

The modification of this disease, known in the books as bilious pneumonia, presents no very striking symptoms in its progress, except those that are dependent upon, or growing out of a diseased condition of the organ with which it is associated. It is in short, the same disease, or a mere modification of it, with these bilious symptoms superadded. In this case we have pain in the side and region of the liver, with tenderness on pressure in that region, usually yellow skin, a more dark and yellow appearance of the urine, and a more yellow appearance of the expectoration, with an icteric color of the eyes. Such cases will be found to occur most frequently late in the fall, or early in the spring; and the febrile symptoms associated with it, will universally present a more distinct periodical character. One modification of this disease however, from its frequent occurrence, and more especially from the distinct consideration given to it by most writers upon this subject, requires at least a passing notice. And though I consider it as merely an accidental concomitant, from the symptoms it presents as generally occurring, it requires a corresponding modification in treatment. I refer particularly to what is called *typhoid pneumonia*. The term typhoid, as used by modern authors, is not applicable as a general thing, to the disease under consideration, though it is in accordance with the popular understanding of that term. Although I have seen a few cases in which the characteristic symptoms of typhoid fever were present in the latter stages of this disease, it nevertheless is of rare occurrence. In most of the cases occurring in this country, that take on this low grade of fever, those peculiarities which in the present scientific acceptation of the term can legitimately be termed typhoid, will not be found to exist.

In this view of the case, I have been in the habit of calling such diseases congestive winter fever, characterized by all those low, nervous, and typhous symptoms by which the latter disease is vulgarly known, with the pneumonic symptoms superadded. If these cases are neglected, or improperly treated, they become protracted in their course, and present symptoms that are very severe in character and doubtful in their results.

Diagnosis.—Inflammation of the lungs is more liable to be confounded with pleurisy and bronchitis, than with any other disease. The physical symptoms that have already been enumerated in these diseases respectively, when carefully studied, will

form a sufficient contrast, by which the observing physician will be able to determine their character. I shall not therefore dwell upon the diagnostic symptoms, as I have heretofore usually done.

Prognosis.—In determining the probable results, much depends upon the extent of the disease, the condition of the patient, and his constitutional peculiarities. But when this disease, even in its more complicated and grave character, is promptly and properly treated it rarely proves fatal. But if cases of a more severe and violent character are neglected, and the disease becomes protracted in its course, and associated in its progress with a very rapid pulse and hurried respiration, with other symptoms corresponding, a far more unfavorable prognosis must necessarily be formed. So also, if the case were clearly associated with distinct and well-defined appearances of a tuberculous diathesis, we should have far more reason to anticipate a softening of the tubercles already existing in the lungs, and a termination of an unfavorable character. If in addition to this, we find an extensive inflammation of the substances of the lungs, connected with whooping-cough, or growing out of epidemic influence, or associated with contagious disease, it presents a far more unfavorable aspect of the case. Hence the necessity of carefully considering and properly weighing all the attendant circumstances and conditions of every case that may be presented.

Causes.—Among the most common exciting causes of this disease, may be mentioned atmospheric vicissitudes; this is especially the case in all inflammatory affections of the chest, if the system while in a relaxed condition is exposed to a direct draught of air. I have this season had a number of notable instances, where the individuals had got into a free perspiration from severe labor, and sat down with their coats off. Suppression of long-continued or habitual discharges or evacuations may be numbered among the causes of this disease; and it is said, that the sudden transfer of gout or rheumatism to the lungs has been known to produce it. I should apprehend however, that under such circumstances the case was neuralgia and not pneumonia. There are other diseases which predispose the system to inflammatory action in the lungs. Among these may be mentioned measles and whooping-cough, and possibly smallpox and scarlet-fever. Most of the cases occurring in this Western country, will be found associated with symptoms of a periodic character, clearly pointing to miasmatic influence as greatly modifying the attendant inflamma-

tion. In fact, a large majority of all the cases of this disease, that I have met within an extensive range of practice, have been most palpably associated with symptoms usually supposed to be produced by malarial poison. Those idiopathic cases dependent entirely upon cold, or produced and kept up by it, unconnected with consumption, have been found light and trivial in their character, and to readily subside under simple and mild treatment.

Pathology.—In the consideration of inflammation of the lungs, I have used the term inflammation in accordance with the general understanding of it. But from the loose structure in the organization of the lungs, it will rarely be found that pure inflammatory action exists in them, but rather that of a congestive character, and I consider *that* pathological condition far more characteristic of the disease than can properly be expressed by the term inflammation. I have often intimated, and have even distinctly stated, that I consider the term inflammation, taken in its literal sense, greatly objectionable, both as inadequately explaining the strict phenomena and changes presented in such abnormal conditions, and as tending greatly to mislead in practice. The objection is more obvious when the term is applied to the condition, observed and recorded by all respectable authorities, of the parts as they are really found in fatal cases of pneumonic disease. I have been constrained to retain the term, in treating of those diseases usually called inflammatory, as technically expressing the ordinary phenomena connected with it. In doing so however, I have not failed to protest against it, in order more distinctly to illustrate what I believe to be the correct doctrine as regards the *real condition* of the parts involved, as well as to afford a clear and satisfactory reason for the course of treatment I have adopted, and recommend for your guidance in the management of such cases.

[The appearance of the lungs after death from pneumonia, depends upon the stage which has been reached by the disease in the part examined. Three stages are usually recognized by pathologists.

The *first stage* is that of simple congestion. During this stage the color is deep red, crepitation is diminished though not obliterated, the lung-substance is more dense than in health but will still float in water, and when cut or torn yields a thin, bloody, frothy fluid. Its condition does not differ materially from that produced by the hypostatic congestion which ordinarily occurs in the lowest portions of the lungs at or soon after death without inflammation.

The *second stage*, called by some writers that of *red hepatization*,

and by others that of *red-softening*, is perhaps sufficiently described by these two terms. The chief peculiarities that distinguish this stage from the first are the absence of crepitation under pressure, more tenderness of structure, and such an increase of density that the portion of lung in which the disease has reached this stage sinks when isolated and placed in water. When torn it sometimes presents a granular appearance. This however is not always to be seen, and probably results from the consolidation of bloody serum in the air-cells and not from true granulation.

The *third stage* is characterized by a gray color, increased tenderness of tissue, and the presence throughout the structure of an opaque, yellowish, purulent fluid, more or less tinged with blood. This is called the *suppurative* stage, and corresponds to that of *gray hepatization* and of *gray softening* of different authors. Where the consolidation of the lungs is not very extensive, the patient may live long enough for the texture of the part to be broken down into a purulent mass and thus constitute an abscess. Such an abscess may indeed under favorable circumstances, be converted into an ulcer by opening into a bronchial tube, its contents be discharged, cicatrization take place and the patient recover.

The *three stages* of pneumonia present us therefore, with, *First*, simple congestion of the blood-vessels, *Secondly*, effusion and consolidation of lymph in the extravascular interstices and air-cells. *Thirdly*, degeneration of the lymph and blood into purulent matter, and if death do not occur too soon, solution of the parenchymatous structure of the part of the lung affected. All three stages are often present at the same time in the same lung, the third stage being exhibited in the part first attacked and the second and first in the surrounding parts to which the disease subsequently extended.

S.]

LECTURE XLVI.

LOCAL DISEASES—CONTINUED.

Pneumonia continued; Treatment; Bleeding improper; Experiments of a German physician; Proper treatment given; Cause to be removed; Correct the secretions; Emetics; Cathartics; Hepatic treatment, when necessary; Expectorants; Recapitulation; Treatment, when complicated; Periodicity; Bilious symptoms; Typhoid form.

PNEUMONIA—CONTINUED.

Treatment. In discussing the treatment of this disease, I trust I shall be pardoned for again referring to the conflict of the theory which I entertain, and upon which I predicate what I believe to be sound and correct practice, with that which is so uniformly and earnestly advocated by most of the authorities. Blood-letting, in all cases either of a distinctly inflammatory or of a congestive character, holds the most prominent and important position with the profession; and though I may be considered arrogant and presumptuous, in calling in question opinions of able and eminent men, I must be permitted to follow the course and to recommend those measures which I have found by a careful and disinterested contrast, to result so favorably in the treatment of this disease. I am compelled therefore to yield those feelings of respect and confidence, that I otherwise should have for opinions emanating from so many learned and respectable sources, to convictions resulting from direct experiments and comparisons in the premises. And I can only reconcile the long-continued and numerous concurrences which we find in the books relative to the treatment of inflammatory diseases, to a practice that has most lamentably controlled the destinies of the profession: that of following rigidly in the footsteps of those who have gone before.

In looking over the pages of the ponderous volumes treating upon the diseases incident to the human family, which have been written for the past fifty years, I ask in all candor, where will be found an original thought, or views at variance to any extent with those that have preceded on this subject? While the various sci-

ences have been most eminently enriched by contributions from the indefatigable labors of scientific men, the application of therapeutic measures in correct medical practice has been most lamentably neglected.

While I shall urge the same physical objection to the use of the lancet in the treatment of this disease, that I often have done in the treatment of others of the same class, and especially in the consideration of inflammation in general, I will now merely state, by way of sustaining the course which I shall recommend, that experiments have been made by a learned German physician which afford a ready opportunity to contrast the results of treatment. Three hundred and eighty cases of pneumonia were subjected to treatment with different measures. A portion were treated by blood-letting alone, of which about twenty per cent. proved fatal. In another portion, where tartar emetic was alone relied upon, the results were similar. But of this number, one hundred and eighty-nine cases were subjected to no treatment, so far as medicine was concerned, being left simply upon diet and rest. Of these only about seven per cent. died. These are stubborn facts not to be overlooked, and when taken in connection with my own individual experience, according to which not more than one per cent. can be shown to have proved fatal, the conviction is irresistible and leaves no doubt, at least on my own mind.

I shall not however, dwell longer upon the discussion of general principles, or upon my objections to particular modes of treatment; but shall proceed immediately to consider and recommend those measures upon which I with great confidence rely, with the discriminations that I shall endeavor to make.

It is a matter of the first importance in the treatment of disease, especially when of an acute character, to ascertain the cause that has produced it; this being done the treatment naturally suggests itself, which if in accordance with the physiology of the system and the philosophy of the case, ought rarely to fail of success. It will be remembered that in speaking of the causes of this disease, atmospheric vicissitudes were found most commonly exciting it. Although this may be considered an intelligible expression in common parlance, the philosophy of its effects on the human system, requires perhaps a little further explanation. It may be said to be a sudden abstraction of heat from the body, by which the system, or a portion of it, is lowered in its temperature, producing a loss in the balance of the circulation. In consequence of this, a deter-

mination takes place to some organ of the body previously disposed to disease. Directly dependent upon this condition of the system, will be found a general diminution in all the secreting functions, by which a large amount of stale, effete matter is retained in the circulation, which adds greatly to the difficulties of the case. The determination to any particular organ of the body under such circumstances, will depend entirely upon the predisposition to disease in that particular organ. In some, the bowels will be found the point of determination in all cases of exposure to cold, while in others, the liver, lungs, throat, etc., will be the point of attack.

Since then we have in the disease under consideration, causes in most cases which have brought about a very marked derangement of all the secretions, the first and most important consideration will be to *correct the secretions*, and thus bring about an equilibrium in the circulation, and relieve the system from the loss in the balance of those important fluids, which the exposure has produced. In many mild cases, simply bathing the feet, in addition to the use of such simple measures as shall secure a copious and general perspiration, and the use of mild expectorants, will be found to accomplish all that is necessary. Hot bricks to the feet, and the internal administration of drachm doses of sudorific tincture, or diaphoretic powders in ten-grain doses, repeated at intervals of two or three hours, aided by a decoction of *asclepias tuberosa*, together with an expectorant sirup of *eupatorium perfoliatum* and *sanguinaria*, will be all that is required. This should be continued for several hours, if necessary, or until the febrile symptoms which are found to exist, have measurably subsided; which will soon be followed by a decline in all the symptoms, in mild cases of inflammatory character. If however, these means should not be found sufficient to insure this effect, or if from the severity of the symptoms, it should be apparent that more efficient and active measures will be required, the application of a number of cups to the seat of the disease, followed by a thorough cathartic, should first be premised, before the measures above recommended are instituted. There will be cases occasionally met with, in which derangement of the stomach and bowels will be found to exist, where a more thorough and complete evacuation will be indispensably necessary, before complete relief can be anticipated. And where the other symptoms are proportionately severe, of course the treatment should be equally prompt. In these cases scarified cups should be thoroughly applied to the side, which can be most

conveniently and at the same time most effectually accomplished, by using tumblers as large as can be made to fit the side, exhausting them of air by burning a lock of cotton, or a little alcohol or ether. They should be applied at different points over the seat of the disease, and should be repeated every day, or every other day, until the active symptoms subside. This should be accompanied by a very active and thorough emetic, which in a very remarkable degree equalizes the circulation, relieves the lungs from engorgement, produces a more copious expectoration, and cleanses the stomach from accumulations, that alike tend to keep up the disease and embarrass the proper operation of other remedies. This will be accomplished, either with appropriate doses of the infusion of lobelia and boneset, or by the acetous tincture of lobelia and sanguinaria, or the common emetic powder composed of lobelia and ipecacuanha, and capsicum. Those cases in which an emetic is required, will generally demand after the emetic, a cholagogue cathartic. Two grains of podophyllin, four of leptandrin, and three grains of sanguinaria, divided into three portions, one of which may be administered every two hours, will be found a very reliable remedy to fulfill the latter indication. Or the ingredients above mentioned may be made into a pill with the extract of taraxacum, and given at little longer intervals, when a very prompt and free effect upon the bowels is not desired.

In former times I was much in the habit of administering, as an emeto-cathartic, with the most satisfactory and successful results, ten grains of pulverized podophyllum with four of ipecacuanha, and repeated in two hours if its emetic action was not produced. But from its peculiarly nauseating, sickening and relaxing influence, I have not latterly as often administered it, though when used, I have scarcely ever been disappointed in breaking down the entire force of the disease. When thus administered, very copious bilious evacuations will be witnessed. A physician of extensive experience remarked to me on one occasion, after he had witnessed its effects in a number of cases, that I accomplished more with it in twenty-four hours than he had been able to do in a week with calomel and the lancet. Hot fomentations with bitter herbs, or hops contained in a flannel bag and wrung out of hot water, should never be omitted in these cases. These active measures should be followed, in those cases where it is found necessary, with less perturbing but quite as efficient means. The sudorific tincture heretofore directed in milder cases, may be

given, which accompanied with the free use of the decoction of asclepias, seems to exert a very happy influence in determining to the skin, and in increasing the urinary secretion. In most cases, these measures will be found all that are necessary to a complete removal of all the active symptoms, without even resorting to their repetition. If however, the symptoms seem to require it, any one or all of them may be repeated. In most cases, where a slight continuance of the symptoms may be found to persist, a gentle but efficient cholagogue cathartic, with the moderate use of diaphoretics and expectorants, will be all that is necessary.

Though we by no means ascribe that controlling importance to the free action of the liver, in the treatment of this or any other disease, except perhaps when its own functions are deranged, which is so eloquently dilated upon by many authorities, yet we have always found that its depurating influence in many diseases was not to be overlooked. And though we are willing to ascribe to this function its full share of importance, we by no means think that other and equally, if not more important secretions do not exist.

It is always a matter of importance to make use, in connection with other measures, of those remedies which tend directly to *promote secretion* from the *bronchial mucous membrane*, or in other words, to administer expectorants. A sirup prepared from an infusion of sanguinaria one drachm, and eupatorium half an ounce, to a pint of water, with sugar sufficient to make it of the consistence of simple sirup, administered in teaspoonful doses, repeated every hour or two according to the urgency of the symptoms, will generally be found to fulfill all the indications which can be expected from any preparation of the kind.

After the more urgent symptoms of congestion or inflammation have subsided, a troublesome and irritating cough will frequently be found to follow, which will readily be relieved by the occasional administration of from one-eighth to a fourth of a grain of morphia in a teaspoonful of the sirup, or by teaspoonful doses of a cough mixture prepared from oxymel of squills one ounce, pargoric and tincture of sanguinaria half an ounce, and water four ounces, given several times during the day.

It will be observed that the measures recommended have brought into requisition all those important outlets of morbid elements of the system, whose action is essential to health. The urinary organs have been called upon to furnish their proportion in the relief of the case. The skin has been most effectually stimulated

to a free and general elimination of those elements which it should at all times, whether in disease or health, throw off; while the different secretory glands and the mucous surfaces of the bowels and bronchial tubes have not been overlooked in bringing about a favorable issue in the case; and obstinate indeed must be the disease, and slow to respond to the call for healthy action must be the system, that does not yield to all the depurative measures here recommended, and following in such quick succession.

The most common, and by far the most important complication connected with this disease, both as regards the organs involved, and the symptoms which it usually presents, as well as the modifications of treatment which its proper consideration almost necessarily implies, remains now to be considered. I refer to *periodicity*; which in this country is found by careful observers to modify almost all forms of disease. When we consider the circumstances, and the time of year during which these more severe cases occur, my views can not be considered either strange or unreasonable, or in any way incompatible with the origin and influence of malaria in all those extensive miasmatic districts where autumnal fevers are most rife and severe. The occurrence of a warm open period in winter, or a similar state on the approach of spring, with a sudden change to cold, etc., are the circumstances under which severe cases of this kind are most frequently found; it is under such circumstances that periodical attachment in pneumonia and other inflammatory diseases occurs. How then shall we proceed to its removal?

When a case of pneumonia which is characterized by the periodical influence, is presented to you for treatment, you will find that this influence extends not only to the exacerbations and remissions of the fever, but in a greater or less extent to all the symptoms of the disease. In the treatment of such cases, of course a resort must be had to all those means used in simple or uncomplicated cases, such as cups thoroughly applied to the seat of disease, fomentations, expectorants, and where necessary, emetics and cathartics. But it must be borne in mind that we have this great and controlling influence to overcome, which must be done if circumstances make it necessary, even to the neglect of other symptoms.* The valuable time of a remission should not be spent in waiting for the slow action of cathartics, or any other means that will occupy much time, at this particular juncture very valuable, but rather in subduing this leading symptom, which

gives energy and permanence to all the others. Besides, as we have remarked in the treatment of miasmatic disease, it is far better to produce the full and specific effects of the antiperiodic remedies before incurring the risk of irritating the stomach and bowels, and thereby aggravating all the symptoms by premising evacuants. When however, the stomach is known to be loaded with improper ingesta or acrid secretions, an emetic may be given first of all even in these cases; since the removal of the vitiated contents favors the more immediate influence and full action of the antiperiodic remedies, and an emetic acting promptly will occupy but little of the important time of the remission. It may be important also, during the first visit to apply the cups freely to the seat of the disease, in order to make a more decided impression on it, and thereby increase the stage of remission. These should be followed by the hot fomentations as directed in other cases. There is perhaps no disease, in which the early application (before any irritation has been produced in the mucous membrane of the bowels by an active cathartic) of the antiperiodic remedies is more necessary, and they should be given to the extent of their full and specific action upon the system. We should therefore administer at least three grains each of quinia and iron every two hours until an exacerbation occurs, or until six or eight powders have been given, which may be supposed sufficient to prevent a return of the febrile symptoms. If the fever should come on, it will be proper to suspend their further administration, and resort to those palliative measures which will tend alike to shorten the paroxysms, as well as to add greatly to the comfort of the patient; such as bathing the surface as we have often directed heretofore; the use of expectorants, and if the case requires it, the administration of a mild cholagogue cathartic. This may be continued until symptoms of remission occur, when a return to the antiperiodic remedies is again necessary, as on the previous occasion. In the administration of these remedies, a general, free, and not unfrequently copious perspiration immediately occurs after the first or second dose, which seems to exert a greatly controlling influence upon the exacerbation which would otherwise uniformly occur, but which, if not altogether prevented on the first occasion, will be sensibly deferred, and in the second in most cases entirely prevented.

It is in this modification of the disease, that we find those symptoms of a *bilious* character giving to it the phenomena of what is

termed bilious pneumonia; and it may be necessary to continue the use of the cholagogue remedies, or apply them with more efficiency, after the febrile symptoms have been entirely relieved. Under such circumstances, a pill composed of podophyllin one-fourth of a grain, leptandrin one-half a grain, and extract of taraxacum sufficient to form a mass, should be given once or twice a day, until its full and free action upon the liver is brought about. This will be very much aided in its influence by the use of an expectorant, prepared by a decoction of sanguinaria, senega, and eupatorium, with the addition of loaf sugar sufficient to make a sirup, and taken in drachm doses every few hours, or oftener if the patient is harassed by a harsh or tickling cough.

In all cases presenting those low and nervous symptoms characteristic of what is termed *typhoid pneumonia*, whether occurring early in the case or late in its progress, or whether associated with bilious symptoms or not, it is a matter of importance to use active cathartics with great circumspection and care. In fact I have great doubts whether an active or drastic cathartic in these cases is ever attended with any good results. When in addition to the above symptoms, the periodical character of fever is found to exist, as a substitute for the quinia and iron, the valerianate of quinia will be found a very valuable and excellent remedy. It should be given in two-grain doses to an adult, in all those cases, and under similar circumstances, where I have before recommended the other remedy. It will be found upon careful observation, that in most of the cases presenting the typhoid symptoms as they are called, the tongue will present on its tip and edges, and even on its whole surface, a highly reddened appearance, and the bowels will be found tender, and tympanitic upon pressure, and often disposed to frequent dirty-yellow discharges, often mixed with flaky mucus. Under such circumstances, after having administered the antiperiodic remedies to a sufficient extent, great care should be observed in giving further medicine. In fact the case may now mainly be trusted to the efforts of the system, aided by some of those simple external appliances, which though they may do but little positive good, are certainly free from the charge of doing harm. The application of a warm, soft, bread-and-milk poultice to the surface of the abdomen should be repeated twice every twenty-four hours; and if the bowels are found to be too much relaxed, they should be moderately restrained by the use of a starch injection, with the addition, if necessary, of a small quan-

tity of laudanum. The skin in these cases will usually present a temperature above the natural standard, with some degree of harsh and husky dryness, which should be relieved by the frequent application of warm broke-water and whisky, and friction to the entire surface. In the meantime a weak solution of carbonate of ammonia, say five grains to the ounce of water, may be given occasionally in teaspoonful doses, until the skin becomes permanently cool, and the other symptoms shall have mainly subsided.

[**R.**—Carbonate of Ammonia, grs. x.
 Tinct. of Prickly Ash berries,
 Water, āā f3j.

Mix. S. Give a teaspoonful every hour.

S.]

The diet should be of the most mild, simple and unirritating kind, mostly of a fluid character, unless the stomach of the patient positively demands other kinds. When the skin has become cool, and has a more natural feel, the moderate use of ale will be found to facilitate greatly the patient's recovery. It should be administered at first in small quantities, diluted with water, and gradually increased as the patient can bear it.

In some cases of an extreme character, a more powerful stimulation may be necessary, such as hot brandy or whisky toddy, which will be followed by the most desirable results. Under its use the patient becomes calm and quiet, and the pulse less frequent and fuller. These measures will be found especially applicable to old and debilitated persons, where the heat of the skin is scarcely above the natural standard in the commencement of the case. In such cases a resort to active cathartics, or sometimes even to mild aperients, will not be admissible. Reliance must be placed upon the antiperiodic measures, with direct stimulants, and the local treatment before spoken of.

In some cases, after the antiperiodic remedies have been pretty thoroughly administered, so that the force of the disease is mainly, but not entirely arrested, it will be found that after suspending the measures for a day or two, the fever will manifest itself in a distinctly intermittent form. The antiperiodic measures should be immediately resorted to again in large and repeated doses, when the most happy results can with perfect confidence be expected.

Frequently after the suspension of the antiperiodic remedies just referred to, a slight fever of irritation will continue for a number of days, requiring and indeed bearing only the mildest treat-

ment, which eventually manifests the periodical character, and should be met as above directed.

From what I have said on the subject of the administration of quinia and iron in the treatment of this disease, and *especially* taken in connection with what I have so often said of them in relation to other diseases, I suppose it scarcely possible that any misapprehension can exist. But for the purpose of securing the most unequivocal appreciation of my views, I will reiterate that their administration is *alone* to be governed by the demand, as indicated by the symptoms of malarial influence; preferring the manifestation of a remission, however slight that may be, for the commencement of their use; and that no inflammatory complications constitute any objections, where their use is otherwise indicated; having in hundreds of instances thus administered them, without any aggravation of the inflammatory symptoms, but on the contrary, usually with manifest benefit in this respect.

I do not however, let me further add, consider those remedies the most appropriate in the uncomplicated inflammatory diseases; but I recommend their use as favorably influencing inflammatory action, only in those cases complicated with malarial disturbance. I can not refrain from adding, that without great care and particular attention to this fact, in this and other inflammatory diseases prevalent in this country, the periodicity or remission will be liable to be overlooked, and the advantages to the patient thereby lost.

Having in so many cases seen the benefit resulting to my patients from the administration of these medicines, even where the remission was scarcely perceptible, though from the circumstances strongly suspected, and without any disadvantage in any case, I can not lose this opportunity to impress upon you the attention which long experience has so well convinced me the subject really demands.

LECTURE XLVII.

LOCAL DISEASES—CONTINUED.

Pulmonary Emphysema: General Remarks; Generally a secondary affection; Symptoms; Physical signs; Morbid appearances; Causes; Prognosis; Treatment. Asthma; Definition; Characteristic Symptoms; Physical signs; Causes; Prognosis; Treatment.

PULMONARY EMPHYSEMA.

The term *pulmonary emphysema* is used to indicate an inflated or distended condition of some portion of the pulmonary air-cells, or that condition in which the air has either escaped from the proper vesicles of the pulmonary structure into the intercellular tissue, or has been diffused upon the surface of the lungs beneath the pleura. It rarely occurs as an original affection, but in association with pulmonary diseases, is not uncommon. When confined to a small portion of the lungs, the indications of its existence are very equivocal and not readily recognized. But when it occupies a considerable portion of the substance of the lungs, and especially if it extends to the surface of the pulmonary substance, there is no great difficulty in determining its presence.

Symptoms.—This disease so generally supervenes upon, or is produced by other and often grave affections of the lungs, as to render it very liable to be overlooked until it has progressed to a considerable extent. Thus, dyspnœa is one of the special symptoms of emphysema, and yet it so often occurs in other affections of the lungs, that a physician who is not fully alive to modifications and changes in the progress of disease, might be easily misled by it. Especially would this be likely in the early stage of the affection, or in cases in which it is limited in extent, as under such circumstances dyspnœa occurs in paroxysms or under the influence of causes calculated to increase the respiratory movements, or produce general disturbance. In fact the dyspnœa varies in all cases, in some being much more distressing than in others, and occurring in irregular paroxysms of uncertain duration. These paroxysms seem to be greatly influenced by the attendant circum-

stances, even slight bodily exertion sometimes increasing shortness of breath to the extent of dyspnœa; but permanency of obstruction produces more or less constant difficulty of breathing. In children the obstruction generally amounts to distinct asthmatic respiration while awake, though when quietly sleeping the only abnormal sound that can be heard, without auscultation, may be a slight murmur. In severe cases the recumbent posture is difficult to keep, often producing a sense of suffocation and sudden and hurried change of position. Cough is most generally, if not invariably attendant upon emphysema and somewhat peculiar in its character. It has an oppressed or strictured sound, and is usually accompanied by more or less expectoration which, generally presents a glairy mucous appearance, and often affords considerable relief to the oppression felt in the chest. Laennec however, thinks that simple vesicular dilatation has very little influence in producing cough and expectoration, which may rather be referred to accompanying irritation of the bronchial mucous membrane.

Permanency in this obstruction necessarily exerts important influences upon the general system, affecting as it does the character of the vital fluid, upon the healthy condition of which depends the appropriate functions of all the organs of the body. Hence ensue in this affection a pale and cachectic state of the body, shortly followed by emaciation with a soft and relaxed state of the tissues, and a depraved condition of the secretions. During a paroxysm of dyspnœa the lips become purple, indicating an imperfect aëration of the blood, and in severe cases the face, lips, and fingers exhibit more or less constantly a dark or purple hue. Sometimes the paroxysm is so severe as to produce an irregular action of the heart, and signs of hypertrophy in that organ. The constitutional disturbance is by no means commensurate with the local difficulty, although it is a severe affection and often produces great uneasiness and distress. Thus, when unaccompanied with acute inflammatory action, the pulse is slow, though sometimes irregular, and the skin does not greatly vary from its ordinary temperature. But it is rare to find its early stage free from symptoms of a more general character, since the affection almost always results from antecedent organic derangement of the adjacent bronchial mucous membrane.

The *physical signs* of this affection are more characteristic and reliable than those we have been considering. In extensive emphysema the abnormal expansion of the chest, greater than is pro-

duced by almost any other affection, is at once suggestive of the condition of the lungs. One or both sides of the chest will appear prominent, according as the internal dilatation is confined to one or extends to both lungs, and the intercostal spaces over the parts involved will be more full and prominent than usual. But the surest indications will be afforded by auscultation and percussion combined. One of the most unequivocal signs is the remarkable hollow and loud sound emitted on percussion, which however is not that entirely hollow sound characteristic of an extensive cavity resulting from an abscess, but a resonance greatly increased above a normal or healthy one. This will often be extended to portions of the chest ordinarily yielding a dull or very obscure resonance. In some instances the lungs become so extensively involved as to displace the adjacent viscera, and thus give rise to a resonant sound over the region of the spleen and liver. It is no doubt owing to this swollen and stuffed condition of the lungs, causing pressure upon the heart, that those symptoms of cardiac disease, which are frequently present, are produced. But it not unfrequently happens, in connection with the increased resonance, that some portions of the chest will give a very dull or flat sound, corresponding in this respect with the signs upon auscultation, which yields little or no vesicular sound; thus showing great obstruction, if not complete hepatization, of that part of the lung.

Those portions of the lungs presenting unmistakable evidences of emphysema, do not afford the ordinary respiratory sound; or if heard at all it is less apparent, and more feeble, than in health. This however, in some cases is doubtless owing in part to the fact, that the natural and healthy murmur is obscured by the mucus, and sometimes is associated with crepitant râles. This is very likely to happen in the early stage of the disease, and when the affection occurs in children. When the air-vesicles of the part involved are not entirely obliterated, the different sounds emitted in health, and those also in other diseases of the lungs complicated with emphysema, must exist to a greater or less extent. Hence in some cases, and especially in children in whom healthy respiration is more distinctly heard, the ordinary murmur will be more or less apparent. So also in those cases of this disorder complicated with inflammatory symptoms, the dry or moist râles will appear, according to the character of the disease, and its stage of progress.

The *morbid appearances* of emphysema are striking and peculiar. After removing the sternum and bringing the lungs into view,

distinct but irregular patches, of a bladder-like appearance, will be seen at different points of the lung involved, and upon opening the cavity of the pleura the lung will not collapse as in ordinary disease. In some cases when the bony walls of the pulmonary organs are separated, a perceptible expansion of the compressed and imprisoned lung takes place. Though the specific gravity of the lung is diminished, yet its substance has a firmer feel than the healthy lung, and sometimes pits under the finger. The proper air-cells of the lungs, when cut into, are found expanded, in some instances to an almost incredible extent, while a more critical examination will generally show the interlobular spaces more or less distended with air. This condition of the lung may be quite extensive, or it may be limited and mainly confined to a single lobule.

While this condition of the vesicular substance of the lungs will be presented, the adjacent bronchial or air-tubes will rarely be found free from evidences of morbid action antecedently existing, or from the foot-prints of more recent acute disease. Thus, either a thickened or highly engorged state of their mucous surfaces, or a sensible hypertrophy of the walls of the bronchial tubes, accompanied with considerable contraction, or diminution in their caliber will be found; though in some instances the tubes will be expanded and attenuated, while the pulmonary tissue will be soft and flaccid, presenting a paler appearance than usual.

The terms *vesicular emphysema*, and *extra-vesicular emphysema*, have reference to the situation of the air. In the former the air-cells are merely distended; in the latter, one or more of the cells having become ruptured, the air is diffused through the interlobular cellular tissue. Both these conditions often exist at the same time.

Cause.—It may be said with truth, that this disease rarely occurs as a primary affection, but results generally from previously existing disease of the small bronchial tubes. Hence it frequently follows catarrhal affections, in which a partial obstruction of the small bronchial tubes has taken place, and on account of which an unusual effort is required, upon any considerable exertion, to supply the requisite amount of air for the demands of the system. In this way the air-vesicles become expanded. It often results also, from extensive obstruction in a portion of the pulmonary substance, in consequence of which a portion of the lungs is required to perform the function of the whole. Thus it often occurs in children

affected with congestion of a portion of the lungs. It has also been produced by intense muscular effort, in which an extraordinary respiratory movement is required, such as active and protracted tussling, or lifting and carrying heavy burdens, in all which efforts full and unusual expansion of the air-vesicles takes place. It may likewise result from long and violent fits of coughing, such as frequently occur in whooping-cough, and some cases of bronchitis. One or two instances of this kind have occurred in my own experience.

Prognosis.—Slight cases of this affection may be productive of little inconvenience, and by proper care and appropriate treatment recover entirely. But it may be doubted whether cases that have gone so far as to produce deformity in the walls of the chest, and a constant shortness of breath—which by slight exertion is increased to great oppression and dyspnœa—ever entirely recover, although such cases, if not so severe and extensive as to jeopard the life of the individual by producing a state of asphyxia during a paroxysm, may linger for a great length of time. The general tendency of all these severe cases is gradually to increase, especially upon the occurrence of a cold, or other exciting cause of bronchial irritation. Therefore in severe cases, and especially if they have been protracted, we would not be warranted in promising a favorable issue to the case; the prognosis may rather be considered unfavorable.

Treatment.—In mild cases presenting no symptoms of an urgent character, little more is necessary than to avoid the exciting cause, to abstain from every thing calculated to increase the respiratory movements above the ordinary degree, and to use those measures best adapted to give tone to the general system. In severe cases an observance of the same general principles will do more for the comfort of the patient than can be hoped for from a more active course of medication. In these cases one of the most important points to be gained is, if possible to prevent the paroxysms of dyspnœa, as this will not only conduce to the present comfort and well-being of the patient, but afford the strongest hopes for a final contraction of the dilated air-vesicles. And for this purpose patients should be directed to avoid every thing that will increase the respiratory movement, or excite arterial action. Only moderate exercise should be allowed, and all efforts at bodily action of every description, beyond what is necessary for the general health, should be strictly prohibited. Moderate exercise in the

open air, as much as the patient can bear without excitement or fatigue, would be useful, guarding particularly against rapid motions, against ascending flights of stairs, lifting, or otherwise exerting the muscular system in any way that would require a more than ordinary inflation of the lungs. A uniform temperature is also important; to secure which the patient should keep warmly clothed, wearing flannel next the skin, and guarding against every exposure liable to produce cold, such as wet feet, sitting in a draft, etc.

The condition of the bowels should receive special attention. You should particularly avoid the administration of active purgatives, while it is not much less important to keep up as natural and healthy an action as possible, in order to promote healthy assimilation, and prevent morbid accumulations. When the bowels are costive, and there is no evidence of febrile action, the compound tincture of tamarac will fulfill the indications of an aperient, tonic, and diuretic, better perhaps than any compound known to pharmacy. In connection with this preparation, chalybeates, such as the muriated tincture of iron and soda, should be given two or three times a day.

But when inflammatory symptoms are indicated by heat of the skin, hurried respiration, and excited pulse, cups may be applied over the parts involved, followed by hot fomentations, and the occasional administration of more free cathartics, the frequent use of the sanguinaria and lobelia sirup, and appropriate doses of a solution of strychnia. To relieve the urgency of symptoms frequently occurring, a pill of camphor and hyoscyamus may be given three or four times a day. These measures should be repeated and persevered in until the symptoms for which they were prescribed have been in a measure relieved, when a sirup of the euonymus atropurpureus should be prepared by steeping an ounce of the bark in a quart of water, and after straining, adding sufficient loaf sugar to make a sirup; which should be given in tablespoonful doses three or four times a day. In this preparation we have an excellent aperient and tonic, as well as a diuretic, and at the same time it appears to exercise a specific influence on the pulmonary organs conducive to healthy action.

ASTHMA.

This affection is familiar to almost every individual, and is generally known by the name of asthma, though in some sections of

the country it is commonly called phthisic. The term is usually applied to an oppressed respiration or dyspnœa, occurring in irregular paroxysms. The disease resembles, in this respect, the bronchial irritation which results from a sudden cold, or from any other cause capable of setting up an irritation in the bronchial mucous membrane accompanied by a spasm; or a very similar symptom may result from bronchial congestion. In fact the essential characteristic of asthma is very well exhibited in such an attack, to which, no doubt, asthmatic patients, if closely interrogated, would refer the first appearance of the peculiar symptoms of this affection.

The pulmonary air-tubes are largely supplied throughout their whole extent with nerves and muscular fibers, which contribute an important part to the function of respiration. It is not fully determined to what extent this peculiar organization of the bronchial mucous membrane influences the respiratory action; but it is agreed that a morbid sensibility of this structure produces affections of the organs of respiration, characterized by peculiar nervous symptoms and often accompanied with unmistakable evidences of spasmodic action. Such is the character of one modification of croup, of whooping-cough, and also of the disease under consideration. That this is especially true of the latter appears from the fact, that symptoms of inflammatory action are seldom developed to an extent sufficient to account for the existing obstruction, and also from the fact, that the difficulty often comes on so suddenly as to preclude the development of inflammatory action or even of congestion, and it is not readily explained in any other way than by supposing a spasmodic action in the mucous membrane of the bronchial tubes. There can be no doubt however, that most cases of bronchial inflammation and congestion are accompanied by more or less spasmodic action in the muscular fibers of the mucous membrane; but those affections are generally more gradual in their approach, and consequently the attendant spasmodic action is less marked and severe, while the general constitutional symptoms are sufficiently diagnostic. It is therefore only those cases of spasm of the bronchial tubes, in which few if any constitutional symptoms are present, and inflammatory or congestive action especially is absent, that should be designated as asthmatic. We can not however exclude in this explanation a grade of local irritation, which may in severe and persistent cases develop a true state of inflammatory action, and thus change the character of the disease.

I have little doubt that cases do frequently occur of a purely

nervous character, in which even the associated irritation usual to asthmatic affections is wanting. Thus, those cases occurring in temperaments of a highly nervous character, produced without a moment's premonition, by a peculiar odor, the smell of ipecacuanha, close rooms, irritation of the stomach, sudden mental emotions, and other influences operating powerfully on the nervous system, are of this character, and it can scarcely be doubted, if the true condition were determined, that they would present few or no evidences of irritation.

The *characteristic symptoms* of a paroxysm of asthma are however frequently preceded for some days by evidences sufficiently distinct to indicate to the asthmatic subject the approach of an attack; though in other cases the paroxysm is either so insidious or sudden as to take him unawares, coming on frequently in the night, and as suddenly as an attack of spasmodic croup. The individual starts up from his sleep, with a sense of constriction in the lungs amounting to a feeling of suffocation, and rushes to a window for fresh air as for his life. Nor does this entirely relieve the difficulty, as an oppressed and wheezing effort at respiration, often heard at a considerable distance, continues for hours, accompanied by a sensible contraction of the chest, and a remarkable hollow in the epigastrium produced by the elevation of the diaphragm. In this condition, it is no unusual occurrence for individuals to sit all night at an open window, or if that is too cold, in a room fully ventilated by having the doors and windows open, and without the least complaint of chilliness or subsequent inconvenience to health, while those around will perhaps suffer intensely from the cold, and incur great danger of inflammatory attacks. The appearance of the patient is often most distressing, the countenance being purple and haggard, and the surface drenched with a cold perspiration, while the capillary circulation in the extremities and over the body, and the severe and labored efforts of the organs of respiration, clearly point to an insufficient supply of atmospheric air to answer the demands of the system. The effort to cough is imperfect from the interruption of the act of inhalation, while the effort to talk is little more successful. The pulse is generally irregular, small and frequent, with occasional attacks of palpitation of the heart. Sometimes however, the pulse is full and regular, or slower than natural. The urine is generally quite pale and copious, but as the disease declines, diminishes in quantity, becomes high-colored, and upon cooling deposits a sediment. The

tongue will mostly be found coated, and the bowels costive, though it is not unusual for a diarrhea to set in. As the spasm subsides, the respiration becomes more full and less oppressed, and a glairy, mucous expectoration takes place, giving to the disease the character of *humid* asthma; while in the other instances the spasms decline without expectoration, in which case it is by some called *dry* asthma.

These constitute the leading symptoms of a paroxysm of asthma. The return of the paroxysms varies greatly in different cases; in some occurring not oftener than once a year, or even longer; while in others they return upon every sensible change in the state of the weather. They frequently return regularly every two, four, six, or eight weeks, and sometimes recur oftener, and increase in violence till more or less difficulty of respiration exists all the time. As these attacks subside, patients complain of great exhaustion, with some feeling of constriction in the lungs and soreness of the muscles upon any exertion. Symptoms of indigestion frequently precede a paroxysm, and not unfrequently follow its decline. A sense of fullness and weight in the epigastrium is often complained of after eating, and is followed by gaseous eructations. A peculiarity often attendant upon the disease, is a tendency to distinct periodic recurrences every night, subsiding mainly through the day, for a week or longer, which clearly fixes the neuralgic character of the attack.

Physical Signs. The true condition of the lungs in asthma is very well shown by physical examination. Percussion in the uncomplicated cases will generally be found nearly as resonant over the entire chest as in health; while the usual sounds afforded by auscultation will be greatly obscured even during the most violent efforts at respiration; only a faint and indistinct respiratory murmur, with here and there a wheezing or sibilant sound, will be heard. But as the spasm subsides, and air is more freely admitted into the lungs, a more natural respiratory murmur will be recognized, and if mucous secretion takes place, more or less of the moist râles will be heard. These sounds however, appear to change as the spasm of the bronchial vessels is more or less severe. The cases which have come under my personal observation have generally presented an increased expiratory sound, often exhibiting the distinct wheezing sound which is heard on inspiration as the disease subsides.

Few diseases which continue so long, produce less serious effects

upon the general health than uncomplicated asthma. It is not unfrequent to meet with individuals who are vigorous and healthy in every respect, except a liability to occasional attacks of asthma, and who thus continue through life to a good old age. Yet it does not follow that the influence of asthma is particularly conducive to longevity or good health, and the only safe inference we can draw is that such persons are remarkable for soundness of constitution, and a general healthy state of the system in every other respect. This is confirmed by the fact that persons differently constituted, with either an hereditary or acquired predisposition to disease of the lungs or of other important organs, frequently find premature graves from complicated asthmatic affections. Thus we frequently meet with asthmatic subjects in whom the disease is slowly but surely developing a latent tuberculous affection, which might otherwise have lain dormant or have been removed by constitutional changes. In this way also, affections of the heart may be produced, in delicate muscular systems, from the severe and labored action of that organ often attendant upon asthmatic attacks.

Post-mortem appearances.—The morbid developments in fatal cases of asthmatic affection vary greatly in different cases. Thus, instances are recorded in which a sudden attack of asthma produced asphyxia and death, and upon examination little or no morbid action was found to have existed; while cases proving fatal under other circumstances, are generally so complicated with other affections as to render it difficult to determine how much of the morbid appearances are referable to one or the other. Thus, when asthmatic symptoms have preceded and perhaps accompanied true pulmonary disease, it would be impossible to determine in what respect the former may have modified or influenced the appearances of the case. I may say also, that uncomplicated asthmatic affections so rarely prove fatal that but little light has been thrown upon the morbid anatomy of the disease.

Causes.—It is generally conceded by the profession that there may be an acquired or hereditary predisposition to asthmatic affections. But what peculiarity of constitution or physical organization is necessary to the susceptibility thus generally admitted, it must be acknowledged is not explained or fully understood. The most that can be said with any reasonable show of truth is, that persons with narrow or contracted chests, and with great nervous susceptibility of the lungs, are more liable to attacks of the kind

than others differently formed and constituted. These facts seem to be pretty well determined. Thus the form of the chest referred to is almost always associated with the disease, and more especially in hereditary cases. Moreover persons affected with asthma are also very liable to nervous affections, such as rheumatism, gout and neuralgic diseases. Few cases of the disease will be found in which more or less tenderness in the roots of the spinal nerves will not be detected by careful examination. The excitability of the nervous system attendant upon excessive sexual indulgences seems often to create a strong predisposition to asthmatic attacks. There are also other predisposing influences, such as intense mental affections or strong passions, and protracted and severe illness involving the nervous system, etc.

Among the *exciting* causes, those connected with derangement of the stomach are perhaps the most common. So intimate is the connection between the condition of the stomach and paroxysms of this disease, that there are but few of the purely uncomplicated cases which may not escape the periodical recurrences, to which such cases are particularly liable, by strict care and regularity in diet and drinks. Another very common exciting cause is atmospheric change. It probably occurs most frequently in Northern climates, and in cold seasons, though it is not very uncommon anywhere during warm, damp and changeable weather. It is often produced, when a predisposition exists, by a sudden exposure when the system is relaxed by perspiration, or by exposure after taking a warm bath. It has also been excited by sudden and unexpected intelligence, and by strong mental emotions. Some persons who are subject to the disease can not endure the odor of ipecacuanha, and some particular plants, or the smoke of tobacco, or a smoky chimney, while others appear to enjoy the utmost immunity from its paroxysms in the midst of smoke and dust. There is sometimes a peculiar mustiness in hay when stirred, that is very liable to excite an attack of asthma in those predisposed to it. It is said likewise to be produced by the suppression of habitual discharges, and the sudden recession of cutaneous eruptions, from the continuous sympathy existing between the skin and mucous membranes. And in short, asthmatic paroxysms may be produced by the contact of any irritating substances with the bronchial mucous membrane, or by any other influences producing similar conditions.

This affection can not be said to be peculiar to any period of life.

It occurs most frequently in middle age, but neither the old nor the young are exempt. Children of good constitutions rarely fail to outgrow it and enjoy a complete immunity from it in after life, a number of instances of which have occurred in my own experience. Nor is it peculiar to either sex, but from more frequent exposure to its exciting and predisposing causes, it is most frequently met with in males.

Those attacks of dyspnoea frequently associated with pulmonary emphysema and other affections of the lungs, particularly consumption, are not properly comprehended in this disease, though genuine asthma may be connected with those affections, and thus produce a complication the character of which it is difficult to determine. In these cases the only safe rule is to be guided by the predominating symptoms presented in the case.

Prognosis.—Uncomplicated asthmatic affections in healthy constitutions should unquestionably be cured, while cases connected with more serious disease of the lungs, heart, or other important organs, can scarcely present any reasonable prospect of much permanent relief. In ordinary cases however, where the symptoms recur and subside again, there is a fair chance for beneficial effects from a judicious course of medication, even if they can not be entirely cured. As before remarked, cases occurring in children, which are quite common, may be considered susceptible of ultimate and perfect cure, while aged persons, especially with somewhat broken constitutions, can only expect to be relieved and the attacks lessened in frequency by an appropriate course of treatment and dietetics. The prognosis may therefore be said to depend upon the circumstances of each case.

Treatment.—The two prominent indications are to relieve the urgent symptoms of a paroxysm, and change the condition of the system upon which the predisposition to the disease depends. To attain these ends, the first and indispensable point is to inquire into the exciting and predisposing causes of the attack.

If then, the exciting cause is satisfactorily ascertained to be derangement of the stomach, whether from excess in eating or drinking, the most prompt relief that can be expected from any measure will be realized from an efficient emetic. Few diseases are more sensibly influenced by the kind of emetics used than asthma, and happily on this point we find a greater concurrence of opinion among medical men than is usual. Lobelia is generally conceded to answer a better purpose in this case than any other

article. Dr. Wood says, "I think I have derived more advantage from it than any other single remedy." One of the most appropriate methods of administering it is in the infusion with boneset. Perhaps an equally efficient preparation is the acetous tincture of lobelia and sanguinaria. Two tablespoonfuls of the former, or one of the latter, should be given every ten or fifteen minutes, till free vomiting takes place. It may be well in severe cases to give small but nauseating doses for about half an hour, for the purpose of producing relaxation of the spasm, as in this way the emetic is more likely to operate, and produce more perfect relief than it otherwise would. The common emetic powder,* infused in half a pint of warm water and allowed to settle, may be given in the same way, gradually increasing the doses. If the paroxysm is not entirely relieved after the contents of the stomach are evacuated, a cup full of clear coffee may be taken, and generally with decided benefit. But should the symptoms seem persistent notwithstanding the emetic, the system may be kept constantly under the relaxing influence of the lobelia, in small doses. For this purpose a few drops of the alcoholic extract may be given every hour on a lump of sugar. These measures may be assisted by the application of a large sinapism both on the spine and the breast; and if much restlessness and nervous irritability accompany the case, a teaspoonful each of sulphuric ether and sudorific tincture may be given, and repeated in an hour and a half if necessary.

When however, the exciting cause seems to be a sudden checking of the perspiration, and the stomach does not appear particularly deranged, there is probably no measure that can be instituted promising so speedy and effectual relief as the following: the patient should be placed in bed, even though it be necessary to take a semi-erect position, and should be kept warm with hot bricks to the feet and sufficient covering, and teaspoonful doses of the compound tincture of Virginia snake-root should be administered every hour and a half in a decoction of *ictodes fœtida* until free perspiration is produced. This may be continued for some hours, and will rarely disappoint your expectations in affording partial if not complete relief. In very obstinate cases, it may be necessary to aid by giving small doses of the alcoholic extract of lobelia, which will assist in the relaxation and perspiration.

* \mathcal{R} Lobelia and ipecacuanha, aa $\mathfrak{z}\text{ij}$.
Capsicum, gr. x. Mix.

If the condition of the system seems to favor an attack from translation of rheumatism, or if spinal irritation is apparently connected with it, the application of cups to the spine will be more likely to afford relief than any other measure that can be used. It may, at the same time, be well to administer wine of colchicum and the sudorific tincture in suitable doses, with an infusion of *macrotya racemosa* and *ictodes fœtida*. In fact this infusion is probably one of the best antispasmodics that can be given in almost any form of the affection. Smoking the dry leaves of stramonium has some reputation, and probably justly, as a remedy for this modification of the disease, but if any cerebral influence should be discovered from its use, it should be immediately suspended. The fumes of burning paper, saturated with a solution of nitrate of potash, is highly spoken of by respectable authorities. Other substances used in the same way are also mentioned. In addition, I will remark that if any other cause, not already particularly considered, is ascertained to have been instrumental in the production of the attack, the measures best calculated to counteract or remove it should, of course, be instituted at once. When the paroxysms recur every night, the patient being comparatively comfortable during the day, or when the history of the case shows a decided periodic character in other respects, you may rely upon the quinia and iron, giving it freely or in sufficient doses to produce the desired effect.

[I have found an inhalation of vapor from hot water to which equal parts of tincture of lobelia and tincture of gelseminum were added, to give relief in very obstinate paroxysms of asthma. S.]

For the purpose of breaking up the morbid influences concerned in predisposing the system to irregular attacks of the disease, every circumstance calculated to sustain them should be ascertained and removed if possible. The habits of the patient should be inquired into and regulated. The diet should be restricted to a regular, simple, and nutritious regimen. Strong tea and coffee should be limited, if not entirely prohibited. Hot bread and biscuit, pastries, bread, roasted potatoes, bread and milk if agreeable to the stomach, and high-seasoned food should be strictly forbidden; while stale rare done beef and other digestible meats, and such other plain and digestible articles as experience or the habits of the patient may suggest, should be allowed. The patient should keep out of the night air, avoid all exposures, and abstain from habits of dissipation, such as late suppers, and extremes of every kind, which

experience and good sense point out as not conducive to good health and longevity.

The patient should be directed to bathe the whole surface once a day in cold water, or whisky and water, as the state of the capillary circulation will indicate, following with brisk friction to induce a healthy action of the skin. A large amount of exercise in the open air should be taken every day in order to secure a free state of the circulation, and inure the bronchial mucous surface to those influences liable to disturb the natural action, if not accustomed to atmospheric changes.

While all these measures are being carried out, other remedies adapted to fulfill the indications which the case presents, should be administered. The most effective remedy I have ever used is the *euonymous atropurpureus* (wa-hoo, or Indian arrow), which fulfills many important indications, and produces as I apprehend, some specific determination to the parts involved in this affection. A sirup is prepared from this valuable drug by boiling two ounces of the bark in a quart of water for half an hour, straining, and then adding loaf sugar or honey sufficient to make a sirup, and brandy enough to prevent fermentation, say one gill to a quart. This may be given in one or two tablespoonful doses three times a day, or sufficient to keep the bowels free and regular. In this preparation the properties of an excellent tonic are combined with a very mild aperient and diuretic, and as it affords relief not realized from other medicines, I think we are justified in concluding that it has a specific influence on the diseased action in this complaint. I have had a number of cases which were permanently cured by its persevering use, and in all the instances in which I have employed it, marked benefit has been observed.

In conjunction with this, other remedies should be used adapted to the peculiarities of each case. Thus, if the disease appears to be connected with irregularity, suppression, or any other derangement of the menstrual secretion, the remedies calculated to restore healthy action to this function should be given. The emmenagogue pill prescribed for chlorosis will be equally applicable in this affection. I have also used with good effect the tincture of *polygonum hydropiperoides*; the saturated tincture may be given in drachm doses three times a day. If the difficulty is connected with a dyspeptic state of the stomach, resulting from the irritation of a superabundance of acid in the stomach and bowels, the compound neutralizing medicine may be used with good effect, and a light

farinaceous diet should be prescribed. If connected with a rheumatic or neuralgic diathesis an irritating plaster or issue may be applied to the spine, and appropriate doses of macrotin, or a decoction of macrotys, or the wine of colchicum, should be given. If an irritation in the bronchial mucous membrane is associated with the spasmodic action, a sirup of sanguinaria, ictodes fœtida, and a small portion of lobelia, adding paregoric if the accompanying cough is troublesome, may be given; and such other measures should be prescribed as are appropriate to similar symptoms in bronchial affections.

Little doubt can be entertained, that the relief afforded by homœopathic prescriptions in these cases, is entirely referable to abstinence from every kind of stimulant and condiment; while the diet is changed from a great variety and excess to one of a plain, simple, and digestible character, and that at regular intervals and in reasonable and appropriate quantities. And it is but little less doubtful, that the success of the hydropathic treatment finds an equally satisfactory explanation, not in the curative influence of water, though that is indeed an important adjuvant in the treatment of many affections, but in the simple character of the diet, the regularity of habits in every respect, and the large amount of out-door exercise, all of which constitute important features in the *curriculum* of hydropathic institutions, thus teaching an invaluable lesson to the world and the profession that the recuperative action of the system, when unembarrassed by artificial habits and unnatural interference, is competent to accomplish important results.

LECTURE XLVIII.

LOCAL DISEASES—CONTINUED.

Phthisis: General remarks; Formerly deemed incurable; Modern views more favorable; Symptoms of predisposition; Scrofulous diathesis; Symptoms of Phthisis; Tuberculous substance; Rapidity of formation; Extent of deposits; Its structure or real character; Symptoms of pulmonary changes; First stage; Second stage; Quotation from Dr. Clarke; Third stage; Quotation from Dr. Tweedie; Quotation from Dr. Clarke; Complications.

PHTHISIS; PHTHISIS PULMONALIS, OR PULMONARY CONSUMPTION.

In considering this disease I shall confine my remarks to that form of it connected with tuberculous formations in the lungs.

The extent of its prevalence, the fatality attendant upon it, the subjects generally claimed for its victims, and the sympathy elicited for them, all combine to render its faithful and candid consideration a most imperative duty, and should encourage us to most strenuous efforts to stay its ravages or weaken its inroads upon society. Dr. Clarke says, "Confined to no country, age, or sex, or condition of life, it destroys a larger proportion of mankind in temperate climates than all the other chronic diseases taken together." "In this country and over the whole temperate region of Europe, tuberculous disease of the lungs causes probably a fifth part of the whole mortality; and in some districts, and even in whole countries, the proportion is much larger."

If in its fatal rounds it were confined mainly to those whose course was nearly run, or with whose brief promise of life was only an association of infirmity and decay, if it were confined to those of undeveloped intellectual and bodily powers, or if it were not that it is generally the mature, the beautiful, the talented, the gifted with genius, who fall its victims, we might not find so much occasion for the promptings of sympathy, and of an earnest anxiety to discover more successful means for staying its fatal course.

"But," says the same author, "the subject, considered in this comprehensive manner, possesses a degree of importance unques-

tionably beyond any other in the whole range of medical science; and I do not hesitate to express my conviction, that in proportion as the medical practitioner is acquainted with the remote and exciting causes of tuberculous disease, so will he be enabled to treat successfully a large number of the cases which come under his care. The increasing tendency to this disease, and the greater frequency of its occurrence, are additional reasons for renewed efforts on the part of the profession for more successful treatment, especially in its early stages, than has hitherto attended the practice of any. And we can but hope that future investigation in the chemical and vital principles of animal life, will render consumption in all its early stages as amenable to a course of medication, as malarial fever is to quinine."

The subject is of inconceivable interest to the whole human race, and though it can not be expected that I shall be able to give to it as elaborate and extended a consideration in all its relations, as might be done in a treatise exclusively on this subject, I wish nevertheless to be able to impress upon your minds the great leading truths as far as they are determined, hoping that they may lay the foundation for further research and observation by some members of the class, and secure at least the general dissemination of what past research and experience have effected. And I cherish a reasonable hope for future success in treatment far beyond the present claim that the most successful have any right to make. In view of the important truths which modern improvements in pathological research and therapeutic appliances have brought to light, there is much to encourage us. While the disease was considered as merely local in its character, and while no attention was paid to those prophylactic measures which recent observation has so often demonstrated as having the effect of staying its further progress, it is not a matter of surprise that the sentiment generally prevailed, that consumption was never a curable disease. But latterly, since a more enlarged view of the subject has been adopted, and the character of the fluids as well as the solids has been investigated, and found to play an important part in the philosophy of the disease, and the remedies applied are found from experience, no less than from sound induction, to change their constituent elements, and thereby greatly modify the organic properties, not only in disease but in health, a new era in this subject has dawned on the public mind. It may not be said that consumption is an incurable disease. While I desire to press the truth of this assertion

upon your minds, I shall do so with all necessary and proper qualifications, in order that too high an estimate may not be put to the account, or an unreasonable degree of expectation excited.

Universal observation has, from an early period in the history of medicine, recognized certain physical conformations and other qualities of the organism of the human body, as indicative of a *predisposition* to or actual invasion of what has been termed consumption of the lungs. Modern investigations have very satisfactorily determined, that these observations are not only correct in the main, as far as they go, but also that these appearances are preceded by, or associated with, a condition of the fluids of the system, peculiarly adapted, if not indispensably necessary to the development of the disease. This condition has been variously styled, according to what different physicians have supposed to be most expressive of their conceptions of the real condition of the system, all however most clearly intending to express the same idea. By some it has been called *scrofula*, or *scrofulous diathesis*, by others *strumous* condition, and by others again *tuberculous cachexia*, etc., etc., all as before remarked intending to express the "condition of the system which gives rise to the deposition of tuberculous matter" in some portion of the system.

Children are often born with this tuberculous condition, or it may be accidentally or otherwise developed at almost any period of life. The manifestations of this state of the constitution will be seen in almost every part of the system, not only in the physical conformation, but also in the expression of the countenance, the color of the skin, hair and eyes, and even the gestures and movements of the individual. In the child it will be observed by the pale and full appearance of the cheeks, and often the upper lip will be tumid, while the color will depend somewhat on the natural complexion of the individual. In children of a brunette complexion, the appearance of the skin will be of a sallow or bilious hue, while those of a light or fair complexion will exhibit a peculiar transparency and waxen appearance of the face. At a later period the eyes have a full and prominent appearance, with a mild and amiable expression, associated with what might be called beauty of countenance. The form of the body will exhibit no very peculiar appearances; though generally full, but of a remarkable softness of texture. But as the disease advances, a manifest disproportion from the symmetry of form usual in other cases will be seen. The limbs will be long, and their muscles lax and soft,

or unusually large and disproportioned, while the chest will be small and contracted, and the head large; and in more marked cases there is often a sensible crook or curvature of the spine, sometimes amounting, if not arrested by appropriate treatment, to great deformity.

When shown at this early period the physical development will be slow and irregular; the circulation will also be imperfect; the feet and hands though moist will incline to be cold; while the pulse will be weak and feeble. A peculiar sprightliness of character and precocity of intellect are no uncommon associates of these physical manifestations.

This weakened condition of the physical system is not, however, a universal attendant on, or a concomitant of the tuberculous diathesis; as it may be first developed in the fluids of the system, some time previous to its manifestation in the more solid structures.

As must naturally be inferred from this imperfect development of organic life, the functions of the different organs will be imperfectly and irregularly performed. And accordingly we observe a very apparent derangement in the digestive functions, either in the loss, or an irregularity of the appetite, or a morbid demand for such articles of diet as possess but little, if any digestible properties. With these also will be associated derangement of the secretions, by which the effete elements of the system are alone eliminated, such as torpor of the bowels with derangement of the character of the evacuations, and diminished and high-colored urinary excretion.

The skin also, that vast emunctory of stale elements, will be found deranged in various ways, generally dry and harsh, but sometimes clammy and soft, while in others, scaly and anomalous eruptions will appear, often about the head, ears and nose, and occasionally in the angles of the limbs. Usually attendant upon these unique and fugitive eruptions, the digestive system will manifest more decided symptoms of derangement. The tongue will exhibit frequently a decidedly red appearance at its edges and tip, and occasionally spots of canker will be seen under it, and on the inside of the lips and cheeks, with more or less enlargement of the salivary and other glands about the mouth, with an offensiveness of the breath most peculiar and striking. With the enlargement of the glands already spoken of, the lymphatic glands of other parts of the system, especially those of the neck, will

often be found considerably swollen, and in cases of a well-defined hereditary character will be slow and difficult of removal.

The same physical appearance, to a certain extent, modified more or less by general development and habits of life, will mark the case later in life, before and after the stage of maturity. In these cases, the peculiar refinement of texture, the color of the lips, the glossy hair, the soft and striking brightness of the eye, the rosy or waxen cheek, the long and muscular development, and the sprightly intellectual and moral faculties, are too well known to the observations of all, as marking the "victim of the fatal scourge," to require any particular consideration here.

It is obvious that the condition of the blood bears a most intimate relation to tuberculous formations. It is through the influence of the blood, affording as it does all the materials for the change and reproduction of the solid tissues of the body, that we must look for those changes inseparably connected with the removal of this abnormal state, and the restoration of disordered organs. Says Dr. Clarke, "The disease of the lungs scarcely predominates over that of the rest of the body, and the seat of the disorder is to be looked for in the fluids, rather than in the solid tissues."

The analysis of the blood made by different authors, in healthy as well as in tuberculous subjects, most clearly confirms the doctrines here set forth. Reference can be had to various writers for a more full explication of this subject.

With these preliminary observations, I shall proceed to consider the course and symptoms of the disease, both of a general and physical character, from its earliest manifestations to its final termination.

The particular change in the condition of the lungs, *immediately preceding* the earliest manifestation of the characteristic symptoms of tuberculous disease, is not well understood. We do know however, that the red corpuscles of the blood are deficient, that albumen is generally in excess, and that this state of the blood necessarily renders its circulation in the capillary vessels difficult and liable to be obstructed. At the same time, the physical conformation, usually defective in such cases, presents an additional difficulty, and favors most remarkably any local determination that may accidentally be provoked to these parts. From these well-defined predisposing circumstances, upon the occurrence of cold, or any other cause capable of

producing a similar effect, a number of the air-vesicles become obstructed, and their minute cavities immediately fill with those elements of the blood most difficult of free circulation, or the inner surfaces of the cells become agglutinated by those plastic elements predominating in the blood, and thus a focus of local determination is established. Thus started, with a combination of all those influences, both as regards physical conformation of the chest, and chemical composition of the circulating fluid, it will be readily observed that tuberculous formations, more or less extensive, must of necessity sooner or later follow. Moreover, the constituent elements of the serum show a remarkable similarity with those of which tuberculous formations are composed, which fact affords a ready explanation for the development of consumption in those who have the predisposition referred to. The obstruction thus commenced, an increase in the nucleus thus made will be more or less rapid, in proportion to the excess there may be in the blood, of those materials of which tubercles are composed, above the normal quantity. In some cases where there is a strong hereditary predisposition giving special direction to it, the formation of tuberculous concretions takes place very rapidly; in which event, we have consumption passing through its several stages to a fatal termination in a short time; while in other instances, where the tuberculous diathesis is not so general and complete, the same disease is very slow in all its stages, lingering for a number of years, and frequently during the largest portion of an ordinary lifetime.

The number and extent of the tuberculous deposits, will also depend upon similar circumstances to those influencing the rapidity of their formation. In some cases they are found "scattered;" in others "they are found aggregated in small groups," and in others again, in irregular masses of variable dimensions. The most constant and invariable locality which they are found to occupy is the upper portion of the lungs. In most cases they occupy the interior of the lung structure, but will frequently be found studded near the surface, but imbedded in the structure. Laennec found the right lung more frequently involved than the left, while Louis and Andral report the left to be more frequently in a tuberculous condition, as observed by them. The observations of others have found no difference in this respect.

There are many other changes taking place in the lungs, following the deposit of tuberculous matter, and to a considerable

extent dependent upon it; among which may be mentioned obstruction of the capillary circulation, with sanguineous congestion, resulting in serous infiltration of the interlobular cellular tissue. Other changes still follow upon the engorgement thus produced, and we find ulceration, softening, and inflammatory action resulting in extensive abscess.

I have made post-mortem examinations of many cases where the tuberculous formations were numerous and occupy a large portion of the lung, in which that organ presented almost a solid or fleshy appearance when cut, and the cut surface was thickly studded with small points of softened tuberculous matter.

Various theoretical opinions have been advanced, of very little practical advantage, in regard to the structure of pulmonary tubercles, and also in regard to the particular parts of these concretions where softening begins. That the tubercle is an inorganic substance is now generally conceded, but the manner in which softening occurs is not so well determined. Being inorganic, it is necessarily insusceptible in itself of inflammatory action, and hence some have thought that softening results from a kind of fermentation of its elements. But this does not account for all the phenomena. The most reasonable explanation is found in the contiguous inflammation excited in the organized tissue in immediate contact with this foreign substance, giving rise to a secretion of pus on the surface of the tubercle, which furnishes an element necessary for the change. This state of inflammation extends to the structure surrounding other neighboring tubercles, and finally the whole intervening parenchyma is gradually destroyed, and cavities are formed of variable size, until an entire lobe is converted into an irregular mass of cavernous and ragged tissues, presenting no trace of healthy pulmonary structure.

Symptoms—First Stage.—Associated with these changes, even before any well-marked general symptoms are manifest, a shortness of breath, and more or less embarrassment of the respiratory functions will be experienced, especially upon any unusual exertion or active exercise. It should be remembered also, that this difficulty of breathing will be an attendant symptom during the whole course of the disease, and may be looked to as an index of the extent of obstruction in the pulmonary vesicles. But among the earliest symptoms clearly manifesting an invasion of tuberculous disease of the lungs, none is more likely to attract attention than cough; and no symptom it may be remarked, is more constant

throughout the whole course of the disease, and none is more troublesome and distressing. It may and often does make but little impression at its first appearance, owing to its slight character and unfrequent occurrence: first observed in the morning on rising, and occasionally during the day, and then only on taking an unusual amount of exercise. But as the irritation which produces it increases, it becomes more frequent and troublesome, and more manifest on going to bed, owing probably to a difference in the circulation produced from a change of position.

At first the cough is of a hacking character, and without expectoration. Shortly it becomes more perfect and full, and is accompanied with an expectoration of a transparent and frothy mucus. The expectoration is not always however, at this early stage, of the character described. Occasionally streaks of blood will be noticed in the mucus thrown up; and in some cases a copious hemorrhage from the lungs will take place. Such a hemorrhage often relieves, for the time being, the severity of the cough; but in other instances an aggravation in all the important symptoms follows, with frequent recurrence of the same difficulty more or less profuse.

In those cases of consumption with which febrile action is associated to any extent, there will be experienced fugitive, shooting and lancinating pains, in different parts of the chest, and often, to a considerable degree, marking inflammatory action either in the cellular substance of the pulmonary organs, or the mucous membrane of the bronchial tubes, or perhaps in the external surfaces of the lungs.

Not long subsequent to the appearance of cough and difficulty of breathing or shortness of breath, symptoms of a more general character, from sympathetic influences, make their appearance. The pulse becomes more frequent than natural, and often hard, especially toward evening and after eating. Chilly sensations will frequently be observed, even during the warmest weather, toward the latter part of the day, followed by more or less febrile reaction, with heat and dryness of the skin which continues often during the early part of the night, and a troublesome sensation of burning in the palms of the hands and soles of the feet. These febrile symptoms, later in the disease, during the latter part of the night, are followed by a free and often debilitating perspiration. This febrile paroxysm is generally so light during its early manifestation, as to be overlooked, but as the disease progresses more

importance is attached to it, and the patient often becomes impatiently anxious for its removal, impressed with the idea that the chill and fever is the only difficulty in the case.

The digestive organs, so intimately associated as they are with all vital action, begin, even at an early stage of the disease, to show signs of derangement. The appetite will occasionally be good, but generally irregular and morbid; at one portion of the day voracious, at another entirely wanting. Sometimes there is a singular demand for articles of diet known to disagree with the stomach, and in other instances, only those of a rare, high-seasoned or delicate nature will be acceptable. This fastidiousness of demand will be associated, as might be expected, with symptoms of indigestion no less variable and marked.

In some instances a sensible uneasiness, occasionally to the extent of positive pain, will be experienced after each meal, frequently associated with flatulency and sour eructations. Digestion during some portions of the day will apparently be performed without much difficulty or delay; while at other times, perhaps shortly after eating, the entire contents of the stomach will be thrown up.

The appearance of the tongue will usually correspond with the state of the stomach. When there is great uneasiness, and tenderness upon pressure over the epigastrium, the edges and tip of the tongue will be red, while the center may be loaded with a heavy white coat, though in some cases an unnaturally high color will be exhibited, without much if any coat on any part. The bowels will usually be costive, though in some instances a slight tendency to diarrhea, even in this early stage, will exist. Later in the progress of the case, a very troublesome symptom will be relaxation and debility of the bowels, with extensive irritation of the mucous membrane.

These symptoms of local disease, will be associated with those of a more general character, not less indicative of the morbid condition of the whole system. The countenance, most of the time paler than usual, will in the after part of the day, especially upon any unusual exercise, have the peculiar, clear and flushed appearance that marks the progress of the case, and points directly to tuberculous disease. The state of the skin also affords corroborating evidence to the same point. It will be found soft and relaxed, and frequently presenting a clammy, doughy feel, with none of that elasticity and warmth usual in health.

These symptoms, together with a gradual emaciation, a feeling of languor and general debility, constitute with those of a more local character, the great outlines of the first stage of tuberculous consumption. It should be observed however, that these symptoms are not invariable, nor are they always developed in the gradual and regular manner herein stated. On the contrary they will be found frequently fluctuating; sometimes symptoms of a favorable character will appear, often to so great an extent as to excite great hope in the minds of the attendants, and especially of the patients themselves, of final and perfect recovery. Then again, a general aggravation of all the important symptoms will be experienced, followed as a matter of course, with a corresponding despondency.

These extremes of feeling and symptoms are in some cases fugitive and of short duration, and in others more lasting. Thus, it is quite common for the strength of the patient to improve during the early spring months, when the weather is pleasant and propitious for exercise in the open air, and frequently during the succeeding summer and early fall, if the tuberculous formations are not very extensive nor far progressed, there will be a marked improvement in the general health, and oftentimes a corresponding improvement in the local symptoms.

The symptoms just described are of great importance, as indicating to what extent obstruction has been produced by the disease. But when the tubercles are small, not very numerous, and scattered over a considerable extent of the lungs, it is often difficult to discover any important change from the ordinary or healthy state. Yet even in such cases, a slight dullness on percussion in the region of the clavicle will generally be noticed, as well as a difference of resonance between the two sides of the chest. It will be seen also that the extent of movement in the chest will be unequal and less than natural. Upon applying the ear or the instrument to the chest, the vesicular sound will be obscure and less distinct than in health, unless an irritation has been excited in the air-cells more immediately in contact with the diseased parts, in which case an increase in the vesicular sound will be heard.

The degree of these abnormal symptoms will depend, of course, upon the extent of the tuberculous deposits and the amount of irritation connected with them. But they are generally not so well defined at this stage of the disease as at a later period in its progress. They are also more peculiar to that stage which is

designated by the authorities as the first stage, or to that state which is anterior to the actual softening of the tuberculous formations.

Although most of the symptoms, heretofore considered as constituting the first stage of tuberculous consumption, continue with more or less increase and severity at a later period in its progress, and although it may be difficult to determine with certainty the precise time at which one period terminates and another commences, yet there are distinctions, always sooner or later seen, so important in their character as to render a division of the disease into stages manifestly proper and even highly useful.

Second Stage.—The most important symptom, and the one which more particularly marks the development of the *second stage*, is found in the character of the expectoration. The transparent and frothy fluid which up to this period has been expectorated, now contains small, opaque, and curdy specks of a pale, yellowish color, and this increases often to a very great extent as the irritation increases and the tubercles soften. “With this change in the expectorated matter,” says Dr. Clarke, “the other symptoms generally increase; the cough becomes more frequent, the evening chills are more severe, the succeeding heat of skin is greater and more general, and the morning perspirations are more abundant and more regular in their recurrence. The hectic fever is now established; the pulse is frequent at all times, and the respiration hurried, even when the patient is at rest. The loss of flesh is very evident, and what remains is soft and flabby; the sense of languor and debility increases, and the patient feels himself quite unequal to the bodily and mental exertion to which he had been accustomed. The face is generally pale during the day, while a circumscribed flush of the cheek is often remarked toward evening. About this period also, if not earlier, pains which are usually considered rheumatic are often experienced in the side and in the vicinity of one or both shoulders. Hemoptysis is likewise a frequent occurrence, amounting in some cases merely to a slight streak in the expectoration, while in others a considerable quantity of pure, unmixd blood is brought up.

“These symptoms are accompanied by a corresponding change in the morbid condition of the lungs. The tuberculous deposit has undergone that process which is called *softening*,—that is, it has been softened and diluted by a secretion from the surrounding pulmonary tissue; and the change in the character of the expect-

toration indicates at once the softening of the tuberculous matter, and its passage into the bronchial tubes. While this process is taking place in the earlier tuberculous deposits, the pleura covering the diseased portion of lung generally becomes adherent to the costal pleura, by the effusion of lymph which is subsequently converted into cellular tissue. The extent and firmness of these adhesions are generally proportionate to the extent and duration of the tuberculous disease. The pains which are very commonly experienced in the upper and lateral parts of the chest, are no doubt partly the consequence of the slight pleuritic inflammation which precedes the uniting process; and accordingly I have generally found on inquiry that they were either confined to, or frequent on, that side of the chest where the most extensive tuberculous disease was manifest.

“While the tuberculous matter is being thus softened and expectorated, leaving cavities of a greater or less extent in the superior lobes, the lower portions of the lungs are gradually becoming tuberculous, the progress of the disease being usually from above downward.

“A careful examination of the chest at this period affords positive evidence of the internal mischief. The upper parts are less freely raised during inspiration than in the healthy state; and this is frequently more evident on one side than the other. The sound on percussion is dull under both clavicles; and on applying the stethoscope to the chest, a slight but peculiar crackling sound (*crepitant rhonchus*) is heard. The voice is more resonant, amounting generally to bronchophony, and distinct pectoriloquy is often heard in one or more points of the clavicular or scapular regions. All these indications are very generally more evident on one side than the other; and hence in obscure and complicated cases, arises the advantage and even the necessity of attending particularly to this circumstance, in order to enable us to establish our diagnosis with more certainty and precision.

“The extent to which the lungs have become tuberculous in the stage of phthisis now under consideration, varies remarkably in different cases, without a corresponding difference in the severity or duration of the symptoms. Two patients having symptoms exactly similar, may on examination of their chests, present a very striking difference in the extent of the pulmonary disease; hence by trusting to the symptoms alone without having any due regard

to the physical signs, we shall often be led into error in estimating this important point.

“The length of time during which a patient may continue in the state which has been described, also varies greatly. In some cases a few weeks suffice to lead him to the brink of the grave, while in others many months or even years, may pass without any remarkable increase or diminution of the symptoms, or there is reason to believe, of the pulmonary affection. In a small proportion of cases, a curative process is established, by which the tuberculous disease is partially or entirely obliterated; and if the patient's general health is maintained in a good state, there may be no further tuberculous deposit.”

Third Stage.—“The softening and evacuation of tuberculous matter,” says Tweedie, “produce the most remarkable and cognizable changes in the physical signs; and these also often give to the expectoration something of the precision of a physical sign. The sputa before may have been sometimes opaque and muco-purulent, as in bronchitis; but they now become decidedly purulent, often sink in water, and if narrowly examined, may sometimes be found to contain particles of a curdy or clotted matter, like cheese softened in water, which is tuberculous; it is not fetid, like the similar concretions from the tonsils. There may also be little streaks or clots of blood; but this is uncertain. There is generally besides, more or less mucus, which gives tenacity to parts of the expectorated matter; but on close examination, it may often be seen that some sputa are opaque purulent clots, almost without mucus; it is these which come directly from the cavities. In whatever part of the chest these changes take place, generally under one of the clavicles, or above the spine of one of the scapulæ, there may be heard a clicking or bubbling sound, which is coarser, and gives the idea of being produced in a larger space than any of the common sounds of these parts. This sign is the more conclusive, the finer and more completely vesicular is the natural structure of the lung in the part in which it is best heard. In listening for it the patient should be desired to cough or take a full inspiration, when at first there may be heard only one or two clicks, from the entry of single bubbles; but as the evacuation of the softened matter proceeds, and there is more room for the entrance of air, there is then a more continued bubbling or gurgling sound, and this will be coarse and distinct in proportion to the extent of the vomica and its commu-

nication with the air-tubes. The gurgling or *cavernous rhonchus* will also somewhat vary according to the quantity and liquidity of the contents of the cavity, becoming less crackling and more whiffing as these diminish. When it is heard over an extended space, there are probably several cavities communicating with each other, and all containing more or less liquid. It may present other varieties, which are quite intelligible when the mode of production is known.

“The softening and evacuation of the vomica being complete, or nearly so, there is left an ulcerous cavity or cavern, which becomes the seat of further phenomena. Even before all the liquid is evacuated, we sometimes hear, in the corresponding part of the chest, with the gurgling, a hollow whiffing or blowing sound; and when the patient speaks, a sort of *snuffling* voice, interrupted, broken up by the gurgling. When the cavern is empty, these pass into *cavernous respiration* and *pectoriloquy*. Cavernous respiration resembles that heard on listening with the stethoscope to the front of the neck over the windpipe: but it is more circumscribed, and does not give the same impression of a rush of air. It may better be imitated by blowing into shells or thimbles of different sizes. It may present considerable variety, according to the size and shape of the cavity, and the freedom with which the air passes into and out of it from the bronchi. When of very large extent, the sound becomes amphoric, like that produced by blowing into an empty vial, and precisely on the same principle. All these phenomena are best obtained with quick forcible respiration, or slight coughing, which increases the force and velocity of the passing air, and exaggerates the sound.

“Pectoriloquy is another very striking sign of a cavity in the lungs. Its value was perhaps overrated by Laennec; but we think it has been neither appreciated nor understood by subsequent writers. We formerly explained that the voice, although formed in the larynx, vibrates in full strength through the windpipe and its branches, until it becomes broken up and muffled in the smaller tubes and soft porous tissue of the lung. But if a cavity be formed in this parenchyma, communicating freely with the tubes in which the voice is strong, it will form a part of those tubes, and the vibrations will be continued *in system* from them to it; and there may thus be heard near the surface of the lung a voice from the chest like that heard over the trachea—its distinctness and intensity being more or less perfect, according as the cavity

is adapted to receive the vocal resonance from the tubes, and to transmit it from the walls of the chest. Laennec made an artificial distinction between the degrees of pectoriloquy, according to whether the voice does or does not give to the ear the impression of passing up the stethoscope when the stopper is in. In the *perfect* kind the words are so distinct that it seems as if the patient had his mouth to the tube: where this impression is not produced, the pectoriloquy is *imperfect*. But this is only a difference of degree, and of doubtful importance. We consider the character of the sound and its circumscribed position a more serviceable distinction. The sound is not a mere vocal resonance, like the bronchophony from consolidation, which is often as loud or louder, and may seem to pass up the tube quite as much; but it is an articulate although indistinct speaking, and sometimes accompanies a loud whisper as well as vocal utterance. There is in it another feature which is characteristic, and distinguishes it from bronchophony; it is accompanied or followed either by whiffs of cavernous respiration, which give the pectoriloquy a snuffling character, or by a hollow or tubular resonance, like that produced on speaking at the orifice of the tube of a Panpipe, the pipe of a large key, a shell, or any such hollow body. This accompaniment is sometimes heard when the pectoriloquy or the transmission of the articulate voice is very imperfect; but we have found it to be more distinctive of a cavity than the loudest vocal sound without it. It may be supposed to depend on the same physical cause as that of the similar sound in the hollow bodies to which we have compared it; the cavity in the lungs being in the same relation to the bronchial voice as they are to the oral voice. When the cavity is large, the resonance is more amphoric or bottle-like; and if the communication with the bronchi be at the same time narrow, the voice may be scarcely transmitted to it, but excites in it only a tinkling echo—a metallic tinkling, as in pneumothorax. All these hollow, fistular, or tinkling characters may be also perceived in the breathing and cough, especially in the latter, but not in a proportionate degree, and sometimes are only perceptible with the voice. These differences must depend on the relations of the cavity to the air-tubes communicating with it: if this open into them so as to catch the current of air passing through them, its interior will be thrown into vibrations; otherwise the air in the cavity may only receive the stronger and more pervading vibrations of the voice. So also, if there be much consolidation about and beyond the cavity, there may be

very little passage of air in the tubes, and therefore but little cavernous breathing."

The more general symptoms of the third stage are thus given by Dr. Clarke: "This has been termed the colliquative stage, from the copious perspirations, the frequent attacks of diarrhœa, and the abundant expectoration by which it is usually attended. With these symptoms, but more especially with the diarrhœa, the emaciation and debility generally keep pace; the cough also becomes more distressing during the night as the disease advances, and the patient frequently suffers from pains of the chest; while his breathing is much oppressed on the slightest exertion. The feet and ankles become edematous; the swelling at first disappearing in the course of the night.

"The chest at this advanced period of the disease is found to be remarkably changed in its form; it is flat instead of being round and prominent; the shoulders are raised and brought forward, and the clavicles are unusually prominent, leaving a deep hollow space between them and the upper ribs. The sub-clavicular regions are nearly immovable during respiration; and when the patient attempts to make a full inspiration, the upper part of the thorax, instead of expanding with the spontaneous ease peculiar to health, seems to be forcibly dragged upward. Percussion gives a dull sound over the superior parts of the chest, although the caverns which partially occupy this part of the lungs, and the emaciated state of the parietes, may render the sound less dull than in the preceding stage. The stethoscope affords more certain signs: the respiration is obscure, and in some places inaudible, while in others it is particularly clear, but has the character of the bronchial, or tracheal, or even the cavernous respiration of Laennec. There is a mucus rhonchus; coughing gives rise to a gurgling sound (*gargouillement*); and pectoriloquy is generally more or less distinct—for the most part on both sides, although more marked on one than on the other. In this state the patient may still linger for many weeks, or even months, reduced almost to a skeleton, and scarcely able to move in consequence of debility and dyspnœa.

"With the loss of physical strength, the energy of the mind generally undergoes a corresponding diminution; the reasoning faculty remains, but its powers are evidently enfeebled. Although inwardly conscious of his decay, the patient seldom excludes the possibility of recovery, until at last he becomes indifferent to his

own state and to what is passing around him, notwithstanding he had been hitherto remarkably alive to every symptom.

“During the last weeks of existence there is generally an aphthous state of the mouth, which is a sure forerunner of approaching dissolution; delirium, of a mild character likewise occurs at intervals, although in some cases it is entirely absent. In a few instances I have observed violent delirium for several days preceeding death.”

Such is the more common progress of tuberculous disease of the lungs, and such are the phenomena by which it is generally accompanied and characterized: we shall presently enter into a more full examination of the different symptoms.

This tuberculous formation may be confined to one lung for a series of years without involving the other, and the patient may enjoy comparatively good health. And indeed it occasionally happens that, by using appropriate means, the tuberculous matter is softened and thrown off, or, if it exist in small quantities, is disposed of by the action of the absorbents, and the patient finally recovers. But more commonly, when the softening commences at the point of the lung first invaded, additional concretions are taking place in other portions, and finally extend to the other lung, which in turn undergoes similar changes until the patient sinks exhausted from protracted irritation and the loss of vital organs.

During the progress of the disease it is no uncommon occurrence for other parts to become involved. Peculiar and characteristic symptoms will then be manifested. The mucous membrane of the bronchial tubes will frequently appear to take on inflammatory action, thus making a troublesome complication, which may be recognized by the severity and distinct paroxysmal character of the cough, and by its attendant rough, grating sounds. The investing serous membrane of the pulmonary organs will likewise often present well-marked evidences that this part is suffering from sanguineous engorgement; in which case, severe lancinating pains in one or both sides will be experienced, accompanied by more than a usual degree of febrile action and difficulty of breathing. These symptoms are most likely to arise in the latter stage of the disease, when little benefit can be expected from treatment beyond a mere palliation.

The larynx, if not complicated with the disease in its earliest manifestation, rarely fails sooner or later to exhibit signs of serious difficulty, and often presents one of the most troublesome

and distressing symptoms the patient has to bear or the physician to treat. This is a greater or less degree of hoarseness, which begins with the commencement of the complication, and goes on increasing until, in the latter stage of the disease, it often entirely impedes articulation. The morbid condition of the throat indicated by this symptom will be apparent upon examination. The posterior fauces will have a decided granular appearance, and on the surface of the tonsils and palatine arches the vessels of circulation will exhibit a dark red or purple color, extending as far down as can be seen. This pimply appearance is owing no doubt to the destruction of the delicate epithelial covering of their surfaces, either by absorption or some analogous morbid action.

Whether from chronic indigestion or some other cause, derangement of the *stomach* often becomes complicated with consumption in its early stage, and it rarely fails in the latter stage of the disease, to exhibit decided evidence of abnormal action. A smooth, red tongue and epigastric tenderness are the most striking indications which will be observed at an earlier or later period, while in the latter stage the constant tendency to diarrhea usually existing, points to the *bowels* also as more or less involved in the general morbid action. The *liver* by turns exhibits symptoms of organic or functional disturbance, which will be indicated by the color of the skin and eyes, and by the light or clay color of the alvine discharges. This disturbance, however, is by no means as common or important as the complications of the stomach and bowels. Other organs of the body will be found more or less diseased at different stages during the progress of consumption, but as I shall refer to them more particularly in other places, and as they have no very important practical connection with the treatment, I shall not now describe them.

Such then are the outline symptoms usually developed during the different stages of this insidious and generally fatal disorder. But it is subject to so many changes and such diversity of complications, that it is impossible for any description to include the ever-varying features of every individual case. Hence our symptomatology of the disease must necessarily be general, as it is impracticable to designate all the particulars which may be observed in actual practice. In some cases the first *particular* symptom that will attract attention may be a profuse hemorrhage from the lungs which, though giving relief to a previously existing

sensation of fullness and a hacking cough, is in general the commencement of more grave and rapid symptoms that rarely fail to supervene. In females the first fears of consumption are sometimes suggested by a slight cough, dating from an arrest of the menstrual evacuation by cold as the patient supposes, and attended with no other symptoms of a cachectic condition than a feeling of general debility. In such a case both the patient and her friends are apt to suppose that the restoration of the menstrual function will restore her to health, not once suspecting that this is an associated and secondary difficulty, following upon a prior morbid condition of the whole system. And in such cases, the symptoms may oftentimes be arrested by appropriate treatment, and the attendant general derangement corrected. Occasionally indeed, even when a severe cough, hectic fever, night sweats and emaciation have been associated with the catamenial obstruction, all these symptoms have subsided and the system recovered its usual health and strength. But more generally the symptoms gradually increase until the constitution is entirely undermined beyond the hope of restoration.

In other cases, again, the foundation is supposed to be laid by taking a "severe cold," while in the enjoyment of what is considered good health. This is followed by a hoarseness and "soreness of throat," upon which an irritating and troublesome cough supervenes, and at length all the symptoms of confirmed phthisis are fully developed. These, with many other modes of approach equally insidious and deceptive, and equally certain in their tendency with those which are more decided and not so well calculated to flatter and mislead, will be observed among the Protean phases which this disease assumes.

Than this, there is perhaps no disease more wide-spread and fatal in its results, none which so often lulls the victims of its choice with the syren song of hope and safety. Few are the exceptions in which the consumptive patient does not find some plausible explanation for every new stride in its onward course, and still hope that the particular symptoms complained of will soon subside and health be reëstablished. Thus the patient goes on from step to step even to the last and most fatal stage, hoping every day to be better, and unwilling to believe that recovery is improbable until "the spell of death is on" him, and he finally sinks into his long, last repose, with the profound regrets of associates and

acquaintances, and with all the sympathies of anxious and sorrowing kindred and friends.

Yet not always do patients thus hope against hope, and deceive themselves with delusive promises. I have met with others who clearly foresaw and calmly awaited the fatal result; and one in particular, of a truly noble spirit that disdained and neglected no labor to cultivate and perfect faculties naturally capacious, and the opening pathway of whose future was illuminated with alluring prospects of high achievements, yet who patiently followed the insidious advance of the fell destroyer, almost from its first approach through the several stages of its progress, with the heart-sickening conviction that hereditary taint had marked him for an early and untimely grave. In words of equal beauty and pathos his soul thus uttered the foreshadowings of its departure:

“The spell of death is on me! I have heard
In dreams the rustling of his shadowy wing
Above me like a prophecy! *The bird*
That wakes his carol in the breath of spring,
Knows not more surely that his joy is nigh
Than my sick spirit that I soon must die.

“My eye is bright, they tell me, and my cheek
Wears still the rosy color that it wore
When life's full tide glowed through each pulse to speak
In eye and cheek as they shall speak no more;
It is a feverish brightness; day by day
The inward fire consumes my strength away.”

LECTURE XLIX.

LOCAL DISEASES—CONTINUED.

Phthisis continued: Physical symptoms; Tuberculous matter; Quotation from Dr. Clarke; Morbid anatomy; Quotation from the same; Causes; Diagnosis; Prognosis; Treatment; Change of Climate; Exercise.

PHTHISIS—CONTINUED.

Physical Symptoms.—We come now to consider the physical symptoms of consumption. Those developed during the later stages of the disease, you will have observed from the quotations I have given, are well defined and unequivocal. At an earlier period the sounds recognized by auscultation will be the mucous, sub-crepitant, and sonorous râle. Percussion will be dull, and the vibrations of the chest will be readily recognized by applying the hand to that part. The upper portion of the chest will be flattened and contracted, and either an unnatural resonance will be heard on percussion—indicating the existence of cavities from the discharge of large tuberculous formations—or more generally a dullness of sound will be heard, owing to consolidation from adhesive inflammation caused by the presence and alterations of the tuberculous deposits; at the same time there will be an increase in the vibrations of the chest upon speaking or coughing. When cavities exist the sounds peculiar to them will be emitted upon auscultation. The gurgling sound resulting from an accumulation of matter partially filling the cavity will be distinctly heard. This is styled the cavernous respiration, and is accompanied with vocal resonance—a peculiar sound, also called pectoriloquy. When the cavity is large the respiration becomes amphoric, and the sound called metallic tinkling may also be present. These examinations should always be made with great care on both sides of the chest alike, and different portions of one side compared with corresponding parts of the other side, in regard to the signs elicited by both auscultation and percussion.

Tuberculous Matter.—Before considering the morbid anatomy of pulmonary tubercles, I desire to read to you Dr. Clarke's section on the "seat, consistence, form, and chemical composition of tuberculous matter," and as the views there presented harmonize entirely

with my own, I adopt them without comment. He says: "Minute and careful anatomical researches, often repeated, have led Dr. Carswell to the conclusion that the surfaces of the mucous and serous tissues, and the blood, form the exclusive *seat* of tuberculous matter. In no instance has he found this morbid product deposited in the molecular structure of organs. The free surface of mucous membranes forms the chief seat of tuberculous deposits. 'There, as into the great emunctory of the system, it appears to be separated from the blood and becomes visible to us under a variety of forms.' 'In whatever organ the formation of tuberculous matter takes place, the mucous system, if constituting a part of that organ, is in general either the exclusive seat of this morbid product, or is far more extensively affected with it than any of the other systems or tissues of the same organ.' But in those organs in which the mucous tissue is minutely distributed, as in the lungs, it is often difficult to demonstrate the presence of tuberculous matter in this system, and the more rapid its deposition the greater is the difficulty; and this is still further increased when such deposit is complicated with inflammation.

"The free surfaces of serous membranes and the cellular tissue in general, form the frequent seat of tubercle.

"'As a morbid constituent of the blood,' Dr. Carswell observes, 'we can take no cognizance of the existence of tubercles, otherwise than through the medium of the secretions, or until that fluid has ceased to circulate; then the tuberculous matter is seen to separate from the serum, fibrin, and coloring matter, and is distinguished from them by its peculiar physical characters.' In this state it is met with in the cells of the spleen.

"The *consistence* of tuberculous matter varies from that of a fluid to the firmness of cheese; the degree of consistence depending chiefly on the resistance offered to its accumulation and the absorption of its more fluid parts.

"The *form* of tuberculous matter Dr. Carswell considers as entirely dependent on the structure of the organ in which it is deposited. Its granular appearance in the lungs is owing to its accumulation in a small number of contiguous air-cells; and the lobular arrangement which it sometimes presents in the same organ, is produced by its being deposited in the air-cells of a number of lobules, the intervening pulmonary tissue being unaffected. When the tuberculous matter is disseminated throughout a considerable extent of lung, it has no definite form.

“Whatever may be the site, consistence, or form of tuberculous matter, it is to be regarded as a morbid inorganizable product, and consequently insusceptible of any change that is not affected by the living tissue in which it is deposited.

“Animal chemistry has not done much to illustrate the nature of tuberculous deposits, and a rich field of inquiry on this subject is still open to the experimental chemist. It would be very desirable to have the blood and other fluids of tuberculous subjects analyzed, as well as tuberculous deposits in man at different ages, and also in the lower animals.

“The chemical composition of tuberculous matter varies according to the different periods at which it is examined; also in different animals, and probably in different organs. In man it is chiefly composed of albumen with varying proportions of gelatin and fibrin.” *

Morbid Anatomy.—Dr. Clark’s chapter on the “Morbid Anatomy of Pulmonary Tubercle” is sufficiently full and satisfactory for my purpose, and as I have nothing to add I quote it without further remark.

“The tuberculous matter is deposited in the lungs in three distinct forms,—gray semi-transparent granulations” (Vol. I., page 163),—“caseous or crude tubercle” (Vol. I., page 164),—and “tuberculous infiltration” (Vol. I., page 165).

“*Granulations.*—Gray semi-transparent granulations are scarcely ever absent in any form or stage of consumption. Their consistence approaches that of cartilage; they are generally gray, though sometimes colorless, and vary in size from that of a mustard-seed to that of a pea, being sometimes distinct, sometimes united in small grape-like clusters, and more rarely agglomerated in large masses. They are most commonly found in considerable numbers, often occupying a great part of the tissue around large excavations and the bands which traverse them. The period required for their development is very variable. In acute phthisis, Louis says they may reach the size of a pea in three or four weeks. When subjects already laboring under consumption, or who are in a state of

* “Colored representations of the varieties of form assumed by tuberculous matter in different organs, are given in the first fasciculus of the *Illustrations of the Elementary Forms of Disease*, now publishing by Dr. Carswell; a work which, whether we regard its beauty and fidelity of execution, or its importance and utility in a pathological point of view, far surpasses any thing of the kind that has been produced in this or any other country.”

tuberculous cachexia, are exposed to violent irritations of the lungs, these granulations are deposited so rapidly and in such numbers throughout the lungs, as to give rise to the most alarming dyspnœa. In other cases they may remain small for a considerable period; thus, in several individuals who had cough and frequent attacks of hæmoptysis for many years, granulations, about the size of peas, were the only lesion found by Louis after death.

"The granulations, after a time, begin to lose their transparency and consistence, and become white, opaque and friable; in which state they receive the name of crude tubercles. The period at which these changes take place varies indefinitely; from the observations of Papavoine, Tornelle, etc., it would appear that the change is more rapid in children than in adults: Louis met with five adults in whom the granulations were unaltered. Laennec and Louis suppose that the change begins invariably at the center of the granulations; but Andral and Carswell maintain that it may begin at the center or at any point of the circumference indifferently.

"Gray granulations were first observed and described by Baillie, who thought they were a morbid product, *sui generis*. He described them as constituting a species of consumption, sometimes entirely simple, but most commonly complicated with the tuberculous. He supposed that in time they produce ulceration, and that the caverns to which they give rise are distinguished from those which follow tubercles by being lined with false membrane. Laennec, on the other hand, maintained that they are necessarily the first form under which tubercle presents itself; and Louis and some other pathologists have adopted Laennec's views. But Dr. Carswell shows that the gray semi-transparent substance does not necessarily precede the formation of opaque tuberculous matter; that the latter is found in several organs in which granulations are never observed; and that the granular form chiefly depends on the structure of the air-cells in which it is deposited.

"*Crude tubercle*.—This term is applied to certain tumors of a rounded form, varying in size from that of a pin's head to that of a small walnut. They have a yellowish white color and a soft cheesy consistence. They are, as has been stated, generally the result of changes which have taken place in the matter deposited under the form of gray granulations" (Vol. I., p. 164); "but these two forms almost always co-exist, Louis having met with only two

cases of crude tubercle without granulations, and five of granulations without tubercles.

“*Tuberculous infiltration*.—The third form in which tuberculous matter presents itself in the lungs is that of infiltration into the cellular tissue of the organ. Baillie, who first noticed this state, gives the following accurate account of it:—‘In cutting into the lungs, a considerable portion of their structure sometimes appears to be changed into a whitish soft matter, somewhat intermediate between a solid and a fluid, like a scrofulous gland just beginning to suppurate. This appearance is, I believe, produced by scrofulous matter being deposited in the cellular substance of a certain portion of the lungs, and advancing toward suppuration. It seems to be the same matter with that of tubercle, but only diffused uniformly over a considerable portion of the lungs, while the tubercle is circumscribed.’ This has since been described by French authors under the name of infiltration.

“Another deposit of a peculiar kind, never found in other diseases, is the yellow jelly-like matter, the ‘infiltration tuberculeuse gelatiniforme’ of Laennec, who believes that it is only a more liquid state of the tuberculous matter poured into the parenchyma of the lungs; an opinion which I am inclined to adopt, from having seen large quantities of a similar matter, containing small isolated flakes of crude tubercles, deposited around a scrofulous joint.

“The nature, extent and relation of the different forms of tuberculous matter, and the changes which they undergo in the lungs, vary greatly in different cases. In general, tuberculous matter first makes its appearance in the lungs in the form of gray, semi-transparent granulations, gradually takes on the characters of crude tubercle, and ultimately becomes softened. During the process of softening and ulceration, tuberculous matter continues to be deposited in other portions of the lung, the progress being generally from above downward; so that we often find excavations at the summit, crude or softened tubercles below these, and granulations, with no trace of opaque matter, in the lowest part. At a late period of the disease the substance of the lung is often so filled with tuberculous matter as to leave but few traces of its original structure, the whole constituting a mass of dull, opaque, gray, or white tubercular infiltration, excavated to a greater or less extent.

“The upper and back part of the lungs is the most common

seat of tubercle, and the left side is more frequently affected than the right,—an observation first made by Stark, and corroborated by Carmichael Smyth from an examination of the cases recorded by Bonetus and Morgagni, and more recently by Louis from his own experience. The last author found tubercles exclusively confined to the right side in two cases only, and in five to the left: of thirty-eight, in which the upper lobe was totally occupied by large excavations and tubercles, so as to be impermeable to the air, he met with twenty-eight in the left and ten only in the right lung; and in eight of perforation of the pleura, he found seven on the left and one only on the right side. When to these observations we add the result of Reynaud's experience, who, of forty cases of pneumothorax, found twenty-seven on the left side, and thirteen only on the right, I consider that there is sufficient evidence to confirm the conclusion that the left lung is most frequently affected. This is the reverse of the relative frequency of pneumonia, on the two sides, at all ages. M. Lombard found that, of eight hundred and sixty-eight cases, of pneumonia, four hundred and thirteen were affected on the right side only, two hundred and sixty on the left, and one hundred and ninety-five on both sides. By the above comparison it appears that pneumonia on the right side is to that on the left, in point of frequency, as three to two.

“Softening of tubercle. By those who, with Laennec, regard tubercle as organizable, the process of softening has been considered a consequence of the death of this substance; and by others, who do not take this view of the subject, it has been stated to begin always at the center, and to proceed toward the circumference.” (Vol. 1, page 164.) “But Dr. Carswell has shown that the softer appearance of the center of the tubercle, has no connection with the process of softening. It depends on the tuberculous matter being deposited upon the internal surface only of the air-vesicles or bronchi, the central portion being occupied by mucus or other secreted fluids. When the air-cells or minute bronchi, thus partially filled with tuberculous matter, are divided, they represent tubercles with softening in the central point; when, on the other hand, they are completely filled, no such appearance is presented. ‘Softening,’ Dr. Carswell further observes, ‘begins most frequently at the circumference of firm, tuberculous matter, or where its presence as a foreign body, is most felt by the surrounding tissue. In the lungs and cellular structure of other parts, it is often seen making its appearance in several points of an agglom-

erated mass of tubercle, which has included within it portions of the tissue in which it was deposited; whereas, in the brain, the substance of which has, from the commencement, been separated and pushed outward by the tuberculous matter, the softening process begins, and is always most marked on the circumference.' The softening of tuberculous matter is therefore to be regarded merely as a consequence of the changes excited in the living tissues in which this matter is deposited. The parts in immediate contact with the tubercle pour out serosity, and take on the ulcerative action, by which the tuberculous matter is sooner or later softened and expectorated, leaving in its place a cavity, which, by the successive softening and expectoration of contiguous tuberculous masses, becomes gradually increased in size. Before these changes take place, tubercle appears to produce little disturbance in the general economy, and may exist for some time in several organs, attended by symptoms so slight as scarcely to indicate its presence.

"State of the lung around tubercles. Dr. Carswell has remarked it is an important fact, that the mucous and serous tissues in contact with tuberculous matter are often found in a healthy condition. While this continues, tubercles may remain for an indefinite length of time in their original state; or the softer part of the tubercle may be absorbed, leaving the more solid calcareous portion only in its site; a termination which occurs more commonly, I believe, than is generally supposed.

"Much more frequently the surrounding pulmonary tissue is found in a morbid state.

"The changes induced by the presence of tubercles are, serous and sanguineous congestion, inflammation, induration, or softening, ulceration, mortification, atrophy, and the formation of accidental tissues of a fibrous or cartilaginous nature." (Vol. 1, page 164.)

"Serous congestion, according to Dr. Carswell's observation, occurs most frequently in those cases in which the tuberculous matter is rapidly deposited in the lungs to a considerable extent, as occurs in the acute febrile form of phthisis already described. The serous infiltration of the pulmonary tissue around the tubercular granulations increases greatly the dyspnoea by impeding the free admission of air into the lungs.

"Sanguineous congestion occurs to a greater or less extent in every case. Dr. Carswell remarks that when the tuberculous

matter is situated at the root of the lungs, the large pulmonary veins may be compressed so as to prevent a free return of blood to the heart, and thus produce general pulmonary congestion. In other parts of the lungs, the congestion which arises from the presence of tubercles is only partial. In either case, hæmoptysis may be the consequence; but it is equally certain that, when considerable, it is very commonly attended with general and active congestion of the lungs, and often occurs before the accumulation of tuberculous matter is sufficiently extensive to produce much obstruction to the circulation through the larger vessels.

“When, instead of producing merely impeded circulation and consequent congestion of the lungs, tubercles give rise to irritation and inflammation, we have the usual appearances of inflammation in its various grades.

“The views of Dr. Carswell, regarding the seat of tubercle, enable us to explain, in a very satisfactory manner, the mode in which the different tissues are successively affected. The tuberculous matter being, as he describes, deposited in the air-vesicles and minute bronchial tubes, these parts are necessarily first irritated by it; and being constantly distended by the matter accumulating within them, they are gradually enlarged in size, and sooner or later are destroyed by ulcerative absorption. Hence it is that the bronchi are always found enlarged, stopping abruptly and appearing as it were cut across, at their entrance into a cavern. Unlike the other parts of the lungs, they are never found enveloped and compressed by tubercles, except in those instances of rapid infiltration in which the whole substance of the lung appears to be simultaneously injected.

“The cellular tissue, healthy air-vesicles and blood-vessels are at first only pushed aside, and compressed by the tuberculous deposits, but they are ultimately condensed and rendered impervious to air by the infiltration of tuberculous matter and the common products of inflammation.

“The mode in which the blood-vessels are affected by the development of tubercles and the formation of caverns in the lungs, has been so well described by Stark, that we can not refrain from introducing the whole of his remarks upon it. ‘The pulmonary arteries and veins,’ he says, ‘as they approach the larger vomicae, are suddenly contracted; a blood-vessel which, at its beginning, measured half an inch in circumference, sometimes (although it had sent off no considerable branch) could not be cut up further

than half an inch. And when outwardly they are of a large size, yet internally they have a very small canal, being almost filled up by a fibrous substance; and frequently, as they pass along the sides of vomicæ, they are found quite detached, for about an inch of their course, from the neighboring parts. That the blood-vessels are thus obstructed, and that they have little or no communication with the vomicæ, is rendered still more evident by blowing into them; by blowing they are not sensibly distended, nor does the air pass into the vomicæ, excepting very rarely, and then only by some imperceptible holes: and after injecting the lungs by the pulmonary artery and vein, the parts less affected by disease, which before injection were the softest, become the hardest, and, *vice versa*, the most diseased parts, before injection the hardest, are now the softest.

“ Upon cutting into the sounder parts, numberless ramuli may be seen filled with the wax, but in the diseased parts there is no such appearance; and upon tracing, by dissection, the injected vessels, those which terminate in the sounder parts may be traced a long way to the smaller ramuli; but those which lead to tubercles and vomicæ a very short way, and only to their principal branches. The wax was very rarely found to have entered the middling-sized vomicæ, and never the smaller or larger ones.’

“ Perforation of the coats of the blood-vessels, though never observed by Stark, occasionally takes place; and according to the size of the opening and the capacity of the affected vessel, the patient may have trifling hæmoptysis, or perish in a few seconds from the profuse discharge of blood.

“ Tuberculous cavities generally contain more or less fluid of various consistence and color; sometimes having a resemblance to thick curds; at others a pus, or simple serum, or a mixture of these, and in some instances blood. Cavities are occasionally found quite empty and lined throughout with a dense membrane. This is intimately united with the mucous membrane of the bronchi at the point where the latter enter, and, according to Louis, frequently consists of two layers,—the first, or internal, being dense, gray, or almost semi-transparent and semi-cartilaginous, about the third or fourth of a line in thickness; the second very soft, yellow or white, of about the same thickness, but often not continued over the whole surface, as the first is. Their density and even their existence often seem to bear a relation to the age of the cavity. Both these layers were wanting in a fourth of

the cases examined by Louis, leaving the pulmonary tissue quite bare.

“As the neighboring caverns increase in size, the intervening parenchyma is gradually destroyed, until they coalesce; and an entire lobe may be thus converted into one large, jagged, irregular cavity, in which portions of pulmonary tissue are often found, either hanging loosely or traversing it in various directions in the shape of bands, and occasionally perfectly detached. These loosened portions, the bands, and the walls of the caverns, present little or no trace of the healthy pulmonary structure. They are of a reddish or gray color, and are exceedingly hard, being for the most part composed of semi-transparent granulations, or crude tubercle and black pulmonary matter. Portions of the walls are also occasionally found in a state of mortification.

“The extent to which the lungs are affected by the progress of tuberculous disease varies greatly. In some cases a few caverns only are found at the summit of the lungs; in others the portion of healthy parenchyma which remains is so exceedingly small as to excite surprise that the function of respiration could have been carried on so as to support life. Stark calculated that the extent of lung which remains fit for the admission of air may be estimated, at a medium, to be about one-fourth of the whole substance.”

Causes.—After what has already been stated in discussing the connection of the physiognomy, condition of the blood, and the general cachectic state of the system with tuberculous disease, I suppose but little more requires to be said in relation to its *causes*. It may be useful, however, to recapitulate in a summary way the substance of my former remarks. The particular condition of the solids of the body, that precedes or is simultaneous with the development of the cachectic symptoms, which are supposed to indicate the commencement or presence of the disease, is not well understood. But enough has been observed to render it quite certain that the predisposing condition—which may exist long prior to any apparent derangement of the system—is a “laxity of the tissues” associated with a general fineness of texture and sensitiveness of organization. Whether this peculiarity of organization causes or is caused by contamination of the blood with tubercular elements is not determined.

But however this may be, it is quite evident that the predisposition is more frequently inherited than produced by accidental and

subsequent causes. Indeed, I but repeat a proverb in saying, that the tuberculous diathesis is hereditary, and we all have witnessed the taking off of whole families under circumstances which amply sustain the position. The peculiar organization, inviting the ravages of consumption, is often transmitted through several successive generations, and is attended with more or less fatality at every descent; while in many cases the mysterious germ of death seems to lie dormant or latent for one generation, and then under the influence of causes is developed in the very next generation with all its original power and fatality. And it is not impossible that circumstances, favoring the reëstablishment of strength and vigor of constitution, may so control and direct the organic elements as to free the system, in the main, from its inherited contaminations and thereby wholly prevent the usual consequences. We also now and then see an individual member of a scrofulous or consumptive family, in whom the predisposition is not so distinctly marked as in other members, or who by some means avoids developing influences and thereby escapes.

Whatever may be the original or remote causes of this disease there can be doubt that the most important *immediate* influence, operating for the formation of tuberculous concretions, proceeds from the condition of the blood. In fact, at whatever stage in the progress of the predisposing conditions this state of the blood really begins to exist, it is impossible to suppose the actual formation of tubercles in any part of the system without the previous existence in the blood of the elements necessary to their growth, since the formation, growth, reproduction and repair of every portion of the solid tissues of the body must necessarily emanate from that source. It is therefore, to this fluid alone that we must look as the *immediate* source of tubercular depositions, and upon its influence in the repair and waste of the solids of the body must be our main reliance, and to it must we direct our therapeutic measures, for the removal of the disease.

Among the most prominent and common *exciting* causes may be mentioned that of cold. I do not now allude to the influence of "colds" in producing mere accidental determinations—though this no doubt, in a certain stage of its progress, may have much to do in developing manifest symptoms of the disease; but I refer to that depressing effect upon the vital energies which is well known to result from the long-continued influence of cold. This effect is well known to be produced in Northern latitudes, where a low

range of the thermometer continues for a number of consecutive months. In illustration of this may be mentioned those numerous cases within the observation of most physicians, in which patients have escaped the fate of the rest of their family by removing their residence to a more Southern and warmer climate. Many instances of this kind are known where, by a residence at the South for a series of years, under circumstances favorable for the change, the constitution has been so completely modified and transformed as to counteract a well-defined hereditary tendency, and again admit of a Northern residence.

Another cause that may be referred to, is unwholesome and insufficient food; a cause however, that should rarely operate in this country, where a wholesome subsistence is easily attainable; but in countries where wealth is chiefly hereditary and labor is poorly rewarded, deficient nutriment is a frequent source of tuberculous disease, which occasionally, in such countries, even assumes an endemic form.

In short, any circumstances productive of general debility and exhaustion of vital action, will exercise an important influence in developing a tuberculous condition of the blood. Excessive fatigue, long-continued confinement, unwholesome air, mental anxiety, or depressing mental emotions, profuse evacuations, the use of mercury, and exhausting and debilitating indulgences, are among causes of this kind that are well known to favor the development of consumption.

The causes just enumerated may be considered as operating in a *gradual* manner to develop the latent elements of tuberculous disease. Besides these, there are other exciting influences acting more *directly* to the same end. Among these may be mentioned protracted fevers, by which the lungs are very liable to be involved in more or less inflammatory action. Cold very frequently excites local irritation in the lungs, and thereby tends in a special manner to produce changes in the latent morbid concretions which it may have had no unimportant part in creating. I have seen several cases where the irritation, produced in the bronchial mucous membrane by the inhalation of chloroform and ether, induced inflammatory action which was soon followed by true tuberculous consumption. Suppression of long-continued morbid evacuations, such as fistula in ano, fever sores, or chronic ulcers, have been known, in many instances, to be followed by disease of the lungs. Tight-lacing is another most frequent and

efficient cause, and is both a predisposing and an exciting influence. You will also find that many authors attach much importance to the circumstances of age, sex, occupation and locality, as influencing the production or development of consumption. But it is questionable whether they do not thereby make distinctions without real differences, as almost every influence attributed to these circumstances can be as well if not more properly ascribed to the causes previously mentioned, unless indeed that of age be excepted, which has already been sufficiently considered. To speak of an occupation which necessarily involves the inhalation of acrid or irritating substances or exposure to any other predisposing influence, as a distinct cause, is clearly a distinction without a difference.

Diagnosis.—The *physiognomy* of the disease if I may be allowed the expression, heretofore described, and the usual attendant symptoms, combine to make the diagnosis of consumption not generally difficult or obscure. The greatest difficulty will be to distinguish cases of chronic bronchitis from this disease, and it will require on the part of the physician a rigid scrutiny of the symptoms most peculiar to each in order to form a correct opinion. But when you consider the peculiar bronchial cough, the more copious and somewhat characteristic expectoration, the physical symptoms peculiar to each, and the general absence in bronchitis of the symptoms so strikingly characteristic of the early stage of true pulmonary phthisis, but little difficulty will be experienced in coming to a correct conclusion. If however, the bronchial disease has developed the latent tuberculous affection, or has become associated with it, the physical symptoms so clear and well-defined in either case, will afford very little reliable evidence; and fortunately it is of little consequence in such cases to determine which was the primary disease.

I have seen a few cases in which symptoms that seemed to threaten the patient with rapid consumption, such as hectic fever, night-sweats, rapid pulse, and a most harassing cough attended with a suspicious expectoration, were produced by extensive disease in the roots of the spinal nerves, as shown by the extreme sensibility upon pressure over those parts, and by the fact that under appropriate treatment for the spinal affection all those symptoms rapidly declined. Such cases may be recognized by the absence of the physical symptoms connected with the tuberculous affection, by the want of cachectic appearances throughout the

whole history of the case, and by the presence of the usual symptoms of spinal irritation with which every physician should be familiar.

Prognosis.—The history of consumption has until recently afforded but little encouragement to hope for a favorable issue except in rare cases; but modern investigations of the well-ascertained causes, and especially of the condition of the blood in its necessary connection with those causes, have furnished reasonable grounds for more favorable expectations. Yet even the most sanguine can scarcely expect that the therapeutic measures, adapted to fulfill the great indication in the early stages of the disease, will apply with equal certainty in the latter stages. When the life-sustaining organs of the body are involved, and the great source of vital action is overwhelmed with elements embarrassing the healthy circulation, a favorable issue can not be expected, especially if the structure of the lungs has been broken up, and the greater portion of what remains is studded with extensive tuberculous formations. Yet if there is not a strong hereditary or acquired predisposition, and the main portion of the lungs is not embarrassed with tuberculous formations, if withal there is a good original constitution to aid, we should by no means abandon the case as hopeless, even though we were convinced that a softening and discharge of tubercles of considerable size had taken place.

It is *before* the softening and discharge have occurred that we are mainly to look for favorable results. And here it is that the results of modern scientific research into the nature and qualities of the fluids of the system, and the consequent change and adaptation of therapeutic measures to the disease, furnish special grounds of hope, even beyond any thing that would formerly have been dreamed of. This assertion is amply sustained by the comparative results of the present and former modes of treatment. It is now by no means uncommon for cases to recover under the appropriate treatment suggested and required by the theory that derangement of the blood is the primary disorder, which under the old doctrine of mere local inflammatory action would have been almost certain to prove fatal. And in fact, such is my confidence in the measures which I am about to recommend and with which I have had no little experience, that I do not hesitate to encourage most patients who consult me at any stage of the disease anterior to the actual softening of the tubercles,

with the hope of ultimate recovery. In such cases my opinion would of course be more or less modified by the extent of vitiation of the system, the strength of the hereditary predisposition, and also by the patient's ability to profit by all the influences connected with diet, exercise, bathing and climate.

[Cases are recorded in the books and medical journals, of post-mortem examinations revealing eschars, cicatrices and adhesions, evidently caused by previous tuberculous disease, in patients who finally died of other disorders. Many unequivocal cases of tubercle spontaneously recover, and there can be no good reason to doubt that appropriate treatment applied at the proper time may assist materially in throwing off the disease. Even the formation of a cavity presents no insuperable obstacle to a cure. It is highly probable that there are many cases in which cavity after cavity occurs and is closed by cicatrization, before the patient's health is hopelessly undermined. A single tubercle, even a considerable group of tubercular deposits can not destroy life, so long as a sufficient portion of the lungs remains to accomplish due aëration of the blood. It is the tendency to progressive invasion of the lung-substance that constitutes the danger in phthisis, and if we can arrest this tendency in any stage and leave the patient an adequate amount of pulmonary structure for the purposes of respiration, he may recover whatever changes may occur in the deposits that already exist. If they remain in a quiescent condition it is well, if they assume the form of chalky concretions it is better, and if they are liquified and removed by absorption it is best of all. But they may undoubtedly soften and be discharged by expectoration without necessarily destroying life, though in this case the effects upon the system are debilitating, and if a considerable amount of lung-structure is destroyed, the patient is very likely to continue feeble during the remainder of his life, although the pulmonary affection should be entirely arrested.

In confirmation of these views I insert the following remarks of Dr. James E. Pollock (*Braithwaite's Retr.*, Part xxxiv., p. 55):

"I know of no pathological state more gratifying to study than some of these chronic cases of cavity in the lung, which some have unthinkingly called the opprobrium of our art. The physical conditions should be clearly borne in mind. We have a one-sided affection, circumscribed and well-marked in extent. On its margin there is no evidence of softening; no soft crepitation, nor evidence of more than a consolidation of the lung. Below the

gurgling, or pectoriloquy, or cavernous blowing, we have clear and healthy respiration, and the opposite lung is unimpaired. We are all familiar with the appearance of these cases after death. There is a cavity of irregular shape, and generally lined with false membrane, which is continuous with the bronchial mucous structure. Within it we may find those hardened bands which are either the remains of bronchial tubes or blood-vessels obliterated. Carefully covering-in this cavity there is an indurated wall of condensed pulmonary structure, which by a process analogous to inflammation has been thrown up as it were to prevent the extension of diseased action; while, covering the portion of lung so excavated, and which is generally superficial and near the apex, there is formed a chronic thickening of the pleura, with dense adhesions, binding it firmly to the costal parietes, impeding their mobility and forming an admirable defense against injury from without. With such an isolation of local disease, we have all seen patients supporting life, and even entering into its most active labors for years, and though the ultimate contraction of such cavities and their obliteration be a rare occurrence, we know that it is a possibility, and we have reason to believe, a more frequent pathological event than has been hitherto credited.

“It is important to notice here, that although a very great rally may be made by the system which has resisted an attack of tubercle ending in excavation, yet that there is a limit to the extent of recovery, so to speak. The patient never regains fully the flesh which has been lost; but although he may be able to follow the ordinary occupations of life, there are certain drawbacks to his convalescence, which may be stated to be, that neither in muscle nor in vital power is he ever equal to his former standard of health. This state will be better appreciated if we regard its probable cause. The lungs, as organs serving a vital purpose in the economy, may be presumed to be in volume and capacity exactly suited to the requirements of the healthy body—in other words, the oxydizing and exhalant functions are in proportion to the wants of the system. And so of their supply of blood; an exact proportion must be observed between the systemic and the pulmonary circulation, or the healthy par of the economy is overbalanced on one side or the other. Now, with diminished respiratory volume, there is necessitated a diminution of the daily waste of the carbon in the system, which otherwise could not be got rid of, but must be thrown on other organs in excess, or remain in the

blood as a poison. And so of the water, which is ordinarily carried off in part by the pulmonary exhalation, though it finds outlets by the kidneys and skin. In all cases, however, of loss of respiratory surface there is wasting of the tissues, an obvious means of restoring the balance between the body and the decarbonizing organs, without which any approach to healthy action would be impossible."—S.]

Treatment.—From the views presented in relation to the etiology of consumption, it will readily be seen that the leading indications to be fulfilled in its treatment are twofold, to-wit: 1st. To change the condition of the blood and restore the qualities pertaining to its healthy state; and 2d. Thereby to prevent the further formation of tubercles, give tone and vigor to the whole system, and in a measure change its diathesis. It will however be most convenient, partially at least to reverse this order in considering the subject, as the measures properly included under the second head are of the first importance, and highly useful if not necessary in preparing the way for the efficient action of the remedies more particularly adapted to fulfill the first indications.

From the well-known laxity of fiber, and its usual concomitant of imperfect elimination of stale and effete materials from the system, with an insufficient elaboration of substances necessary to its healthy repair and reproduction, it becomes of the highest importance that a due amount of exercise in the open air should be taken. The kind and amount of exercise should always be directed by the physician. This is all the more necessary on account of the perverse disposition of most patients, and especially those in easy circumstances, to consider it a very troublesome matter and therefore to limit themselves to one or two short walks a day, or to some other effort equally insufficient and unsatisfactory in its effects. It often requires no inconsiderable reflection and ingenuity to devise means for accomplishing this object without resorting to measures which, on the one hand, would be considered menial and improper by persons in comfortable positions, and on the other would be beyond the reach of patients whose every moment of time is necessary to eke out a meager living. Yet, so necessary is exercise to properly change the consumptive diathesis, that it often becomes a matter of life or death. In this view of the subject, an entire change of business or occupation will be many times an indispensable condition of recovery, and in any event, it may be said in general terms that exercise to the extent

of considerable fatigue but not of actual exhaustion, should always be taken, and as much as possible in the open air. It should not be confined to small portions of the day but should be continued as long as it can be borne, and followed by proper intervals of rest, thus alternating exercise and rest most of the time not occupied in sleeping and other indispensable duties. And this course should be faithfully kept up for a series of months or even years, until the system is renovated or the infirmities of age render its continuance impracticable. It will thus often be found that the strength will improve, the ability to endure will increase, until the frail, weak and debilitated subject shall become an athlete, or the sturdy follower of the plow.

The benefits to be derived from active exercise in the open air will be no less apparent in subjects advancing toward a pretty formidable obstruction in the pulmonary organs, than in those who exhibit merely a cachectic condition of the constitution. In fact it may be said that the benefits of exercise will be as uniform as its necessity is universal. If there is any qualification it is that the amount shall be proportioned to the strength and demands of the patient, and increased with the ability to endure. In some cases it may seem almost hopeless for the patient either to exert himself or to derive any practical good from his exertions. But, even though the effort be very slight at first, yet by persevering resolutely and without flinching, and increasing the amount of exercise little by little, at every subsequent trial, the patient will soon be enabled to accomplish what seemed impossible in the beginning.

The particular kind of exercise which is most conducive to health will of necessity be the subject of direction by the physician. As a general rule, females of course excepted, I have no hesitation in recommending, though at the expense of other highly cherished schemes and plans, the kind of exercise attendant upon the diversified requirements of moderate farming, as affording a variety of advantages not found in any other occupation. Even in those cases where the pecuniary condition of invalids does not require that kind of labor for the purpose of obtaining a living, the pursuits of agriculture offer advantages that can not be realized from the kinds of exercise usually taken by such persons where the object is health alone. A moderate degree of agreeable mental excitement is very desirable in most chronic diseases, and the great diversity of mental action educed in the pursuit of scientific agriculture, with the quiet, genial and refreshing repose enjoyed

by those who follow that business either for pleasure or profit, peculiarly adapt it to the necessities of the consumptive invalid. Very different is this from that sameness of feeling, thought and action that must be more or less attendant upon ordinary exercises, such as riding or walking, where they are resorted to exclusively for health, and which therefore soon become irksome and fail to produce any decided benefit. In addition to this, the circumstances of the person who can or does only resort to these modes are apt to be such as to furnish himself with abundant time for brooding over his health and condition—an occurrence always to be guarded against if possible. I should not therefore hesitate for a moment to recommend any man, in whom the marks of hereditary consumption were visible, whether in the bloom of youth, in the maturity of middle age, or even in the decline of life, and whether with flattering prospects of achieving professional eminence, fame or wealth, to abandon such bright and enticing hopes at once, and betake himself to the humble but not less honorable pursuit of farming.

Next to this, where the circumstances will permit, riding on horseback or in a moderately rough carriage is well adapted to the purpose. Connected with this however, is the inconvenience of bad roads and rainy or uncomfortable weather, frequently occurring or continuing for successive days and weeks. The patient therefore should not be limited to such out-door occupations. Wood sawing, or the gymnasium when accessible, may be substituted in unpropitious weather. Either of these modes affords opportunities for general muscular exertions useful for the time being; but such in-door employments have the objection of being deprived of a competent and free supply of fresh air, and are to be considered rather as expedients when the state of the weather precludes more desirable exercise. Playing ball or cricket is an active and agreeable amusement, and when properly pursued may be highly beneficial.

As before remarked, it is often very difficult to contrive expedients for agreeable or healthy exercise within the reach of those whose pecuniary circumstances are limited, or who are necessitated to close and constant manual labor to obtain the means of subsistence. But, remembering that "where there is a will there is a way," even such persons, when aroused to a due appreciation of the necessity of exercise and fresh air, will in some way find the means equal to the desired end. And in any event,

whatever may be done or left undone in the way of out-door exercise, it will be indispensably necessary for the patient who has been previously confined, as the seamstress to her needle, the mechanic to his bench, or the student to his books, to change his or her occupation immediately. This will be the more needful as you can rarely ever expect such persons to persevere for any great length of time in proper habits of exercise in connection with their embarrassing occupations. Whatever may be the condition of patients, very frequent expansions of the chest by full inspirations, will be highly beneficial and should never be neglected.

The state of the weather as regards cold should not interfere with the regularity, and not much with the amount, of exercise that the individual has been in the habit of taking. If necessary he should protect himself by additional clothing suited to the season or to the degree of cold. There is a traditional error prevalent with many people, that it is imprudent or unhealthy to change the clothing during the day or after first dressing in the morning. This notion is replete with mischief and should be guarded against by directing the patient to change his clothing at any time of day, and as often as the weather changes, in order to keep as nearly as may be an equal and uniform temperature of the body. This principle should be observed at all seasons, by reducing or increasing the clothing according to changes of atmospheric temperature, in summer wearing light and cool, and in winter warm and comfortable apparel, and always using the utmost care and watchfulness to protect the body against sudden extremes of heat or cold. Flannel or silk under-jackets in all cases will be found necessary, leaving the choice of the material to each individual's fancy or preference, as either will answer the purpose required, though the silk under-shirt is probably the best for summer. The present fashion of open-breasted vests is not suitable for consumptive patients, who should have those garments made double-breasted in order to cover the chest more completely when out of doors. So also care should be taken to have the outer garments closely buttoned when changing from a warm to a colder temperature, and to remove them while in warm rooms, to guard against the debilitating and relaxing influence of too great warmth, and also to prevent the susceptibility to cold which would thus be induced. The objection to active out-door exercise in damp or wet weather may be in a great

measure removed by wearing a light, loose gum coat and double-soled boots with a loose cork sole made to fit in the inside. The latter has the advantage also of keeping the feet warm in cold, dry weather. I have found from personal experience that boots thus made, with the "uppers" double, are far preferable to any over-shoes I have ever seen.

But no care or protection can always afford the required immunity from the debilitating influence of the protracted Northern winters. The extreme cold of such winters interferes with the amount of exercise indispensable to healthy assimilation. Time, in many cases of consumption, is a matter of the utmost importance, especially where, during the summer, the system rallies its forces and seems to be making great progress in the change of diathesis, which the cold of winter will be sure to arrest. A trip to the South in such cases should be recommended. In fact few cases have much chance of final recovery, when the hereditary tendency is clearly marked, without a change of residence, at least during the winter. It is all-important, however, that this change should be made before the disease has progressed so far as to render recovery almost impossible—an event which unfortunately too often happens before the migration is actually undertaken. I have known numerous instances in which, not only was the disease completely arrested though previously progressing with rapid strides, upon removing from a Northern to a Southern climate and pursuing an appropriate course of medication, but also by long perseverance, the diathesis was corrected, and good health regained.

Extremes of heat are often not much less objectionable than cold, especially when associated with the contaminated atmosphere of large cities. Therefore it is that a residence during the warm summer months, among the hills of our Northern States, has a singularly invigorating influence in many cases. The selection of localities suitable both for summer and winter residences, will always be a matter of advice. The western coast of Florida, the interior of Alabama or the pine groves of Georgia, for the winter, and for the summer the salubrious hills and valleys of New England, with their pure springs and trout-bearing rivulets, will furnish as desirable retreats as any regions that can be named.

Unfortunately a majority of consumptive patients have none of the advantages that admit either of a change of residence or leisure for active exercise, without a change of business, and even then

very often not without considerable sacrifice. But in view of the probable issue of the case if not thus assisted or relieved, the most candid advice should be given, and those measures recommended which might be attainable and would approximate most nearly to such as are considered the best, insisting in *every instance* upon a large amount of active exercise in the open air, with a due regard to heat and cold.

It is hardly necessary to say that when a fatal issue is unquestionably prognosticated by the entire symptoms of the case, it would be both insincere and injudicious to encourage a separation from home and friends, at the very time when the comforts of the one and the kindness and sympathy of the other are most needed, and can least of all be supplied elsewhere. The probabilities of ultimate recovery or very considerable amelioration, should therefore be satisfactorily determined before the patient is advised to exchange the consolations of home for a residence among strangers in a distant clime, where perhaps every convenience not to say comfort, must or can be obtained only through the sordid influence of pecuniary considerations. It is the more necessary to use extreme caution in this regard, as the state of the patient's mind has much influence on the bodily disease, and it therefore becomes of the highest importance to avoid those unpleasant associations and painful discomforts which have a powerful effect in depressing the mind and feelings. This is equally important, whatever the situation of the patient, when withered hopes or disappointed affections often too willingly cherished or gloomily brooded over, are fast wearing upon the increasingly sensitive organization, and daily undermining its power to cope in unequal struggles with the ravages of the disease. In such cases the substitution of different or more cheerful occupations and more agreeable associations will be the very first measure toward a restoration. The particulars of every case will of course be specially and fully considered by the physician and friends, and the course of measures adopted will be governed by the requirements of the patient, and by his ability to command extraordinary aids and advantages.

Before leaving the subject of exercise, it will be proper to allude to a difficulty often met with and presenting a serious impediment to healthy action in the pulmonary organs. I refer to those narrow-chested and stoop-shouldered cases so often found in cachectic or scrofulous individuals, and especially in young persons not well matured. The inevitable consequences of the continuance of this

peculiarity are imperfect respiration and a weakened state of the circulation in the lungs. To obviate this difficulty in a measure at least, a shoulder-brace should be constantly worn, and so adapted to the points of the shoulders that the lacing which is a part of the apparatus will straiten the spine and draw the shoulders back, without any embarrassment to the motion of the ribs and consequently without impeding free pulmonary action. By this means more space will readily be obtained in the cavity of the chest, which will soon be occupied by the gradual expansion of the lungs consequent upon taking proper exercise. Thus also the ability for a greater amount of exercise will be increased, and this in turn will produce an increased demand for nourishing food.

LECTURE L.

LOCAL DISEASES—CONTINUED.

Phthisis continued: Diet; Bathing; Medicinal remedies; Chalybeates; Quotation from Dr. McDowell; Iodine; Prescriptions for cough; Cod-liver oil; Last stage; Diarrhea; Hemorrhage; Local applications; Inhalations.

PHTHISIS—CONTINUED.

Diet.—In former times when consumption was viewed as an inflammatory disease, the diet recommended and allowed by physicians was simple, antiphlogistic, and innutritious, such as was well calculated to fasten the disease and hasten its usual results. But modern investigation has conclusively shown that the elements of the blood necessary to a healthy condition of the system are sensibly diminished in tuberculous disease, and as a consequence that a more nutritious and generous diet is required. Fortunately, manifold experience has uniformly sustained the doctrine suggested by the analysis of the vital fluid. It is now therefore generally admitted that the most nutritious and digestible articles of food should be prescribed as among the means indispensable to a cure. Roast beef, so rarely done as to retain a decidedly red appearance and a bloody juice, should be recommended and used in preference to most other kinds of animal food. Rich in those elements which are deficient in this disease, and yet are requisite to a healthy state of the system, it will readily be appropriated and afford a *means* of restoration. Stale bread, fowls not too old, rare done eggs, well preserved hams especially in the summer, and if the stomach will bear it, good, rich, fresh milk once a day, may all be recommended as suitable articles. Farinaceous substances may come in by way of variety, such as baked potatoes, farina and rice, which also afford elements necessary to sustain respiration. And in short all plain and simple articles which are found best to agree with the stomach may be allowed, avoiding rich pastries, hot bread, greasy animal food, and those succulent vegetables which easily ferment.

It can scarcely be expected that I should do more in this connection than indicate general principles. The details for every case that may arise would be tediously voluminous. The attend-

ing physician must select and prescribe a regimen adapted to the peculiarities of each case, according to the best of his judgment and discretion. I will therefore only add that changes of diet, and even a suspension of stimulating articles for a day or two, as in cases of slight indisposition in ordinary health, will often be necessary in order to relieve the system of any temporary indigestion or unusual irritation that may occur.

Not only, as a general rule, should the diet be nutritious and substantial, but in many cases the moderate use of mild stimulants will be found highly beneficial in promoting digestion and favoring assimilation. For such purposes the purest and best ales, such as Scotch ale and London brown stout, or the lighter wines, such as claret and hock, may be used in small quantities either with or immediately after dinner, with decided advantage. Although I believe that in health every thing of the kind is unnecessary and injurious, yet in disease those means which are improper in health often become our main reliance. The use of stimulants and a full diet will of course be much influenced by the amount of exercise which the patient is willing or able to take, and should in a great measure be governed by it.

Another measure of no little merit on account of its curative influence, is *bathing*, which perhaps may be more appropriately considered in this connection than elsewhere, though the condition of the skin has an important relation to the remedies hereafter to be prescribed. The depurating functions of the skin have not generally been sufficiently appreciated either as regards their preventive or curative influence on disease, and I can not but think that the success attendant upon the appliances used in hydropathic establishments is mainly referable to their effect on the functions of the skin, and the consequent elimination of the stale materials of the body which result from want of healthy action in this important emunctory. From an extensive experience in the application of this measure in a great variety of diseases, both of an acute and chronic character, I have no hesitation in recommending it as worthy of frequent trial. The particular mode and time of its application will vary more or less with the different symptoms and conditions of the system. When there is a pretty good capillary circulation, and not too much debility to prevent a prompt reaction—which will be shown by a warmth and glow upon the surface—the shower-bath taken every morning immediately upon leaving the bed, and followed by brisk friction with a coarse towel,

will be found an invaluable restorative in this disease. But in its advanced stage, or in cases of weak and nervous constitutions, where the capillary circulation is languid, reaction is apt to be imperfect, and therefore this method should not be tried, or if tried should be immediately abandoned in the event referred to. In no case need a large amount of water be used, nor should any one bath be long continued. The water in the first instance should not be very cold, not lower than eighty degrees Fahrenheit, but as the patient becomes accustomed to it, may be gradually lowered to the ordinary temperature of the room. In addition to the direct influence this operation exerts on the functions of the skin, it also has a salutary effect upon the whole circulation, and particularly upon the capillary vessels, producing a healthy equilibrium in the blood, and thereby not unfrequently promoting the urinary and other secretions.

But in those cases in which the shock is too severe, and reaction does not readily follow the shower-bath, general sponge-bathing may be substituted. This may be done as in the other case, early every morning. Weak and debilitated persons very frequently can not bear the application over the whole surface at one time; but by applying the water, not very cold at first, on a portion of the body and following with the necessary amount of friction, and then proceeding to other portions in a similar way, the whole surface may be thoroughly bathed with decided advantage. If however this can not be borne, warm broke—or weak—ley water and whisky may be used every night before going to bed, followed with the crash towel and friction. This indeed may be desirable in those cases having evening febrile exacerbations, even though one or the other bath is taken every morning.

In the selection of *medicines* for the treatment of consumption, two leading indications are presented in all those cases characterized by the tuberculous condition heretofore described, to wit: *general alteratives*, or remedies which stimulate all the great outlets of morbid elements, and *permanent tonics*. Fortunately there is no incompatibility in the effects on the system of these two classes of remedies, or such of them as experience justifies us in using in this disease; on the contrary they act in perfect harmony on the tissues, and in some cases indeed those of one class, or those possessing the peculiar properties of the class in a prominent degree, fulfill indications of both descriptions.

In the selection of remedies, the fact should be borne in mind

that the blood in this disease is deficient in fibrin and red globules, as well as in many of its mineral constituents, particularly the ferruginous and alkaline, and hence those articles should be prescribed which combine the properties necessary to supply this deficiency. Few if any articles known in the *materia medica* produce in a more eminent degree alterative and deobstruent effects on the animal economy, and are better adapted to fulfill the indications in this respect presented in tuberculous affections, than the *sanguinaria* and *taraxacum*. The latter, especially in the form of the hydro-alcoholic extract, possesses sensible alkaline properties, upon which its value, in this disease, in part depends. It is well known to act upon the liver, promoting healthy bilious secretion; while at the same time its tonic properties aid digestion, and thereby favor any other tonics that may be prescribed. Its action on the renal emunctories is not less marked and apparent than on the secretory organs, increasing in a very sensible degree the quantity of urine. Thus this simple and unobtrusive medicine may be said to act with no ordinary effect upon two at least, of the most important outlets of effete elements of the body. Having used it for many years in this and other diseases, on an extensive scale, my opinion is not based upon mere theory, and I am well convinced its claims are by no means appreciated by the profession. The effects of the *sanguinaria*, though less apparent are not less real, and it supplies a place in this disease as in many others not readily filled by any other articles. It is well known to possess emetic and sedative properties, but its influence on the absorbents specially commends it in the treatment of tuberculous disease. I have so often witnessed its effects in arresting effusion and promoting absorption of the false membrane in croup as to leave no doubt of its properties in this respect. It also possesses very valuable properties in promoting healthy secretion. This is manifest in its action on the bronchial mucous membrane, promoting expectoration when a dry, hacking cough exists. The effect it has upon the circulation in diminishing the force and frequency of the pulse, makes it a valuable article to fulfill those indications when there is undue excitement from local irritation. And in short it has a much wider range of application than is generally awarded to it, acting upon the liver, skin, uterus, etc., in addition to its influence before described.

It will be perceived therefore, that these two articles in combination are well adapted to fulfill the most important indications in

this disease, and should, as they do in my estimation, hold the highest rank among the curative therapeutic agents in consumption. They may be conveniently administered if prepared according to the following formula :

℞. Hydro-alcoholic ext. taraxacum, 3j.
Sanguinaria, gr. xv.
Pulv. liquor. root, q. s. M.

Divide into thirty pills, of which one or two may be taken twice a day.

For those cases presenting inactivity in the hepatic functions and torpidity of the bowels, five grains of podophyllin and ten grains of leptandrin may be added as follows :

℞. Hydro-alcoholic ext. taraxacum, 3j.
Sanguinaria, gr. xv.
Podophyllin, gr. x.
Leptandrin, gr. xx.
Pulv. liquor. root, q. s. M.

Divide into thirty-six pills, and give from one to two twice a day, or sufficient to keep up a moderate aperient and cholagogue action. Or as a substitute, when it may not be convenient to procure the concentrated articles referred to, a sirup may be prepared and administered according to the following prescription.

℞. Taraxacum, ʒij.
Sanguinaria, ʒss.
Euonymus, bark.
Ptelea bark, āā ʒj. Pulv. and mix.

Make into a quart of sirup by boiling, adding two pounds of loaf sugar, and a gill of brandy to prevent fermentation. Of this a common stemglassful may be taken three times a day. The euonymus or "Indian arrow," the bark of the root of which is used, possesses very valuable medicinal properties, with a considerable range of application. The most prominent are its aperient, tonic and hydragogue properties, while the ptelea is unsurpassed as a pure *unirritating* tonic. As a variety, and constituting a valuable tonic, expectorant and alterative, the compound sirup of spike-nard may be given in teaspoonful doses three or four times a day.

Meantime the infusion of the prunus virginiana, or wild cherry bark, should be freely administered in half-gill doses three times a day. The specific action of this article may not perhaps be so

well understood as that of many other remedies, but while we may be under the necessity of administering it somewhat empirically, yet experience has abundantly shown that it possesses medicinal properties useful in this disease. It is tonic and mildly sedative; so that while it promotes the nutritive function, it serves to calm nervous excitement and diminish the frequency of the pulse.

When the system has been long accustomed to the prunus, and a change becomes desirable, an infusion of the cupatorium perfoliatum may be taken cold, in similar or less doses.

The pills before directed, or their substitute, the sirup, should be continued for months together, changing occasionally if the medicine should be found to lose its effects, as most medicines do by long continuance. The sirup of stillingia, especially in those cases of this disease in which the mucous membrane of the larynx and bronchiæ is involved, will be found a valuable remedy to alternate with the medicines first directed. Chewing the root was formerly a favorite mode of using this article in chronic laryngitis.

Among the mineral preparations there is nothing which can be substituted for some of the compounds of iron to supply deficient elements of the blood. The most convenient and least objectionable preparation of this article that I have used is the tincture of the muriate. A preparation similar to some of the most noted mineral waters, and possessing the additional advantage over iron alone of supplying the blood with another element which is deficient in consumption, may be made as follows :

℞. Tinc. muriate of iron, gtt. x.
Bicarb. soda, gr. x.

Dissolve the soda in a tablespoonful of water with loaf sugar, add the iron, let them stand a few minutes, and take twice a day. In this we have a double decomposition and the formation of two compounds held in solution and readily absorbed into the circulation. The muriatic acid unites with the soda to form the muriate of soda, or common salt, without its impurities; and the carbonic acid combines with the iron and forms the purest preparation of that metal used, and, if not in solution, so finely comminuted as to be readily taken up by the absorbents.

In place of this, the tincture of the muriate of iron may be given in similar doses, and gradually increased to twenty drops. It acts very beneficially upon the glands connected with the intestines, especially the liver, and I have seen it produce the most

marked effect upon the capillary circulation of the skin, when administered for diarrhea connected with this and other diseases. When it is given for this purpose it should be often repeated, say once in two hours. I have seen the purple fingers, with cold and clammy perspiration upon the extremities, relieved by this remedy in a number of cases, and the watery and light-colored stools changed to a greater consistency and a bilious color.

I have prescribed another preparation of iron in this and some other diseases with decided advantage; in fact, I have thought from its being more soluble than others that it was more readily taken up, and the effects sooner realized. I refer to the soluble citrate of iron. It possesses some sensible astringent properties, and usually has a good effect on the diarrhea which is often an attendant upon consumption.

It should be remarked that this class of remedies is more particularly useful in the first stages of consumption, before the tubercles have begun to soften, as after that little more than a mere palliative course can be recommended with much hope of success. Still if the case did not present marked evidences of extensive tuberculous deposition, it should not be abandoned, but all the measures which the condition of the system and the symptoms will justify us in using, should be as perseveringly applied as though the case presented a more encouraging prospect, since we have satisfactory evidence that many cases of this character do get well.

The deficiency of the blood in some of the other saline constituents would, upon the soundest principles of physiology, suggest the use of such substances as most readily furnish those elements, and experience abundantly sustains the practicability of such a course. The influence of sea voyages, and the anti-tuberculous condition of the system produced by the long-continued use of salt animal food and the want of fresh succulent vegetables, often resulting in scurvy, are no doubt in part referable to the excess of salt in the blood. It is upon this principle that I have used and recommended the preparation of the muriatic tincture of iron and soda, as furnishing this particular ingredient more readily than it could otherwise be taken; at the same time guarding against the administration of too many doses at one time. A long and persevering use of these and other medicines calculated to change the condition of the main elements of the body, is indispensably necessary; nor may it be expected that the

immediate and sensible effects will be produced which we are accustomed to look for from other remedies in the treatment of diseases of a different character, in which a decline of inflammatory symptoms or the subsidence of a fever, often present unmistakable evidences of the effects of medicine upon the system.

But however slow and even imperceptible may be the effects of medicine in this disease, yet by comparing one period of time with another, and by carefully watching the changes in the action of the different functions of the body, we are usually enabled to discover modifications not much less satisfactory than in other diseases where the operations are more immediate. As embodying many common-sense ideas, and also suggesting much that is practically useful, I can not forbear reading to you the chapter from Dr. McDowell's work on consumption under the head of common salt. I do not desire, however, to be understood as fully concurring in all the eminent author's encomiums of that article, though my experience confirms most of what he has said.

“‘*The salt of the Earth.*’ *Nature's Remedy.*’ Of all the articles of the materia medica, or of commerce, this is probably the most valuable in tubercular diseases. In all ages research has been encouraged and prosecuted in quest of a specific for phthisis. Such researches have generally been directed to the vegetable kingdom in distant regions, on the general principle, I presume, of preference to things most remote and most difficult to procure.

“The absurdity of this, I conceive, a small degree of reflection might have exposed to view. For the cure of a disease so all-pervading, if the beneficent Creator had vouchsafed aught in the character of a specific, it might readily have been conceived it would be bestowed to an extent commensurate with that of the prevalence of the malady; but, as far as I am aware, there is no vegetable production which can be propagated throughout even two entire zones of our earth, while the malady pervades the whole of it, and involves the whole of the human race. *Nature's remedy* for consumption, if furnished at all, should be as common, as accessible and pervading as her remedy for thirst. Nor could it reasonably be supposed, inasmuch as the malady is alike common to man and beast, that He whose justice and mercy as much regards the sparrow as the eagle, would leave recourse to such remedy dependent either upon arts of commerce, or exercise of intellectual discrimination; or, in other words, exclusively for the benefit of man. On the contrary, a general instinctive relish for the specific

should rather be expected to have been implanted along with the necessity for it. The pathology of phthisis precludes all prospect of the discovery of an absolute specific for its cure; but of all known medicines, common salt most nearly approximates the character and prerequisites for such an article.

"SALT is found universally distributed over the earth; and most animals have an instinctive relish for it, and are found, when in a wild state, traveling vast distances in quest of it. When it is attained, they seem to take it only as a medicine, not as a luxury.

"Domestic animals, when it is made a rarity to them, by too long intervals of privation, often, on gaining access, injure themselves by taking too much. With a knowledge of this, extensive graziers, in some parts of Virginia, fix large troughs in their pastures, and empty into one an entire sack of salt at a time. They have observed, that with this method less salt is consumed, and that their cattle thrive better. It has also been remarked, that some of the healthiest cattle will not visit the trough for weeks together; but those which have their bowels disordered with diarrhœa, may be observed to visit it several times a day, until relieved. The class of animals constituting an exception as to the instinctive relish for salt, is significant of its curative adaptation. It embraces the exclusively carnivorous, *and none others*—the class least subject to tuberculous disorders; and, in the wild state, probably entirely exempt from them.

"The relish for salt seems almost as instinctive among the human race as with animals, especially in children; and I have pretty constantly remarked that those of strumous diathesis use it with the greatest avidity. So strong is the appetite sometimes for it, that nurses are at great trouble in watching them, lest they might be injured by the indulgence of the craving. I have experienced difficulty in such cases; sometimes inability to satisfy mothers that the indulgence should be tolerated; especially if they were able to inform me that, with all their vigilance, the child had several times stolen the opportunities, and had eaten until made sick.

"Tuberculous children who have not this avidity rarely recover. They commonly have morbid cravings for clay, chalk, etc.

"My attention was first directed to the remedial efficacy of salt at an early period of life. When a schoolboy, in 1806, I boarded with a gentleman who was deeply consumptive. His physicians, who were eminent, extended to him no prospect of more than a

possibility of protracting his existence a few years. It was the first case of phthisis I had ever noticed; and the pale, ghastly countenance, the bloodless lips, copious expectoration, and frequent hæmoptysis, were impressive circumstances, and excited in my mind an interest in all that was done to or by the individual. About his medical treatment I knew nothing, only that from it there was no expectation of a cure. But his avidity for salt was most strikingly remarkable; he ate it with every thing—meats, vegetables, and condiments; with it he whitened the surface of bacon, beets, pickles, and other things to which it is not usually applied. When in his fields he carried dried beef in his pocket, and chipped it off to chew like tobacco between meals.

“The habit was reprobated; his friends admonished him that it would ‘dry up his blood;’ but he ate on, said he liked it and it agreed with him. This was the only circumstance at all remarkable either in his habits or dieting; and he perfectly recovered. He remained through life remarkably lean, but in the enjoyment of more than ordinarily good health, and without a symptom of phthisis. He died suddenly, in 1840, aged fifty-eight; the disease unknown.

“Muriate of soda, as a medicine, is a perfect Proteus. We have seen from analysis, that it constitutes about nine parts per one thousand of the blood, or nearly five per cent. of its solids; a proportion exceeding that of all its other mineral constituents, collectively. A due portion of it, therefore, would seem indispensable as an article of diet. When taken as a medicine the variety of its effects is remarkable. In small doses it acts as a stimulant, tonic, anthelmintic, and anti-irritant; in large doses, as a purgative and an emetic; it is also an astringent and a styptic; and when excessively used it becomes a most powerful sorbefacient. It is, in fact, an astringent in diarrhea, a purgative in constipation, a tonic, an emetic, a stimulant, an anti-irritant, a styptic in hæmoptysis, and the cause of fatal hemorrhage in scurvy.

“The sorbefacient efficacy of salt we see exemplified in its action, when applied locally in form of poultice, or brine, in the removal of wens and other adventitious matters from the tissues of the body. Its efficacy in the removal or destruction of bots, grubs, and other albuminous intestinal entozoa, incident to horses, is of general notoriety; and its efficacy as a vermifuge for children, and their avidity for it when thus afflicted, have also been remarked; but less than it merits to have been.

“Liebig has observed: ‘That the fattening of an animal is rendered impossible when we add to its food an excess of salt, although short of the quantity required to produce a purgative effect.’ From this, it would seem inimical to *all adventitious animal matters*; and comparatively even more to albuminous than to adipose; for its most remarkable sorbefacient efficacy is manifested in scurvy; in which, even where there is absorption of *natural albuminous* tissues, to the production of great ulcers, the persons afflicted are sometimes observed to remain fat.

“That scurvy is consequent upon a change effected by salt in the composition of the blood, rests not upon me to prove. The fact has been long established. Boerhaave, and even Cullen and others, the stoutest champions of exclusive solidism, make this disease an exception to the rule, and ascribe scurvy, emphatically, to saline condition of the blood. Scorbatic disorders are especially characterized by morbid *absorption* of the *solids* of the body. Being in this directly the antipodes of phthisis, which essentially consists in morbid *deposits of solids* in the tissues of the body. And the natural functions of *absorption* and nutrition, alias *deposition*, are those by which the entire body is made and unmade; and by which, in the progress of life, it is so infinitely changed, modeled and remodeled.

“All these pathological and physiological facts have been long established, as well as the fact that the excessive use of salt is the general exciting cause of scurvy.

“But the important corollary, that it must therefore be curative of an opposite condition, has been strangely overlooked.

“Both diseases—scurvy and consumption—on all hands, are ascribed to degeneration of the blood; of which they exhibit intrinsic evidences.

“In scurvy, the degeneration essentially consists in *excessive* abnormal proportion of *globulous* and *mineral*; and in *deficient fibrinous* and *albuminous* constituents.

“In this diseased condition, nature’s effort to restore equilibrium is manifested in the scorbutic absorption of the albuminous tissues, and in the hemorrhagic effusion of the globules of the blood.

“In consumption the degeneration essentially consists in *deficient globulous* and *mineral*, and in *excessive* abnormal proportion of *fibrinous* and *albuminous* constituents.

“In this condition nature’s restorative effort at equilibrium is manifested in the tuberculous effusion of albumen, and in impart-

ing increased fibrinous character to the crassamentum, to arrest hemorrhage from the tuberculous ulcerations.

"The lesion of the blood in scurvy is caused by living too exclusively on salty, nutritious, or stimulating diet; and is cured by resort to succulent vegetables, acid fruits, etc.

"On the other hand, the lesion of the blood incident to consumption, is that which is found to arise from the use of insufficient, innutritious, and succulent diet; or from weak digestion. Why should not a change of regimen alter this condition as well as the other?

"To the cure of consumption a prerequisite is, removal of the tubercular depositions. This can be effected by absorption and excretion, or by ulceration and expectoration; the former, on all accounts to be preferred.

"Now we find exposure to the contingencies productive of scurvy, both causing excessive absorption, and actually curing consumption."

"No observation in relation to the disease has been more common or better established, than that long sea voyages cure consumption, especially if productive of scurvy in the crew. An example of the kind is offered in the following extract from the *Med. Chir. Rev.*, for June, 1824:

"In the year 1722, His Majesty's ship *Leander* sailed from Trincomalee for the Cape of Good Hope, taking on board the mechanics of the dock-yard establishment, then reduced on the island. There were also embarked twenty-six invalids, and all the sick that could be removed from the hospital. These invalids and sick were principally affected by chronic hepatitis, dysentery and phthisis pulmonalis, all of which (even some who were expectorating large quantities of purulent matter) recovered on the passage to the Cape.

"This good fortune was counterbalanced by scurvy, which broke out among the crew, and in spite of large quantities of lemon juice, plentifully administered, in conjunction with every other antiscorbutic which the ship could produce, spread to an alarming extent, and in one case proved fatal.

"Had they not reached the Cape at the time that they did, the *Leander* would have presented as deplorable a spectacle as the *Anson* at Juan Fernandez, notwithstanding the supposed specific, *lemon juice*, which in no instance on board the *Leander* had the slightest effect in even checking the ravages of the scurvy. Immediately after the ship reached the Cape, and the crew got plenty of fresh *animal* food, in conjunction with vegetables, they

rapidly recovered. Specimens of the lemon juice were transmitted to the Victualing Board, and carefully analyzed in London. It was found perfectly good.'

"It appears from this, that while salt, ship-store diet is continued, even lemon acid, the specific, is insufficient to counteract the scorbutic degeneration, as well as that the circumstances productive of this are curative of phthisis; and meat seems to have been one of the restoratives.

"The morbid activity to which the absorbents become excited, by long exposure to the irritation of scorbutic degeneration, causes the removal not only of tubercles and adventitious structures, but also of the natural structures. In this the new-formed tissues suffer first, until, as has been before adverted to, cicatrices and caluses are removed; and wounds healed up for fifty years have been opened as if newly inflicted, and broken bones long knit have been disunited.

"This morbid absorption, which thus carries every thing before it, can not be attributed to the stimulation of salt, 'per se;' but must be owing to the effect upon the peculiar constitution of the blood incident to scurvy, which salt produces to a degree unequalled by any other known article. The globulous degeneration, however induced, will be found thus incompatible with the tubercular diathesis, and consequently curative of consumption.

"I am aware that those cures are not generally thus accounted for. And that many able physicians have satisfied themselves that the cure is effected by the pure sea air, and the exercise of sailing. That those things are advantageous is unquestionable; inasmuch as they are calculated to invigorate the system, which we see by the increased color in the complexion of those who exercise in the pure air, an effect produced by the increase of the red globules of the blood.

"But it happens, singularly enough, that several authors of the highest rank in the science, whose works are text-books in the profession, are found within the same volume, ascribing, in one chapter, the cure of consumption in such cases to the *pure sea air* and the salubrious *exercise* of sailing, and in another ascribing the accession of scurvy to *bad provision, bad air, and want of exercise*.*

* "A large portion of our authorities contain accounts of cures from sea voyages perverted in the statement somewhat in this manner. The following is from Dr. Rush (speaking of cures): 'One of these he says was the son of a farmer in New Jersey, who was sent to sea as a last resource for a consumption. Soon after he left the Ameri-

"Predicated on such hypotheses, patients have been put upon the fruitless expedients of short voyages, as in Europe for example, from Calais to Dover, or from Liverpool to Florence—to and fro; which, if prosecuted to an amount in time and distance equal to that of a long voyage, it was supposed, would be productive of like curative results. The futility and utter failure of all such expedients, should long since have set such speculations at rest.

"The facts in the case when they come to be properly appreciated, will offer much more comfortable, more easily attainable, and, withal, better adapted conclusions. For, I conceive, on investigation by those who can procure better materials for such research than I have access to, it will be found that the scorbutic diathesis is as incongruous to, and as curative of phthisis on land as at sea; and that the same manner of living will as readily produce the same result in the one situation as in the other.

"We have the assurance of credible medical record that scurvy 'was endemic two centuries ago in all the north of Europe,' and that it became gradually less frequent as agriculture and horticulture improved.

"Huxam speaks of it in England in his time. He remarks that it was common with fishermen and tradesmen, and seldom met with in agricultural laborers, who drink cider and eat vegetables and fruits. All the writers of those times point to the latter part of winter, and early part of spring, as the seasons in which scurvy prevailed most—the periods for the use of salt meats and of scarcity of vegetables.

"English history of the same period informs us that agriculture was but little attended to, being superseded by attention to grazing. Cattle and sheep were fattened on grass in summer, and in autumn the inhabitants killed and salted away their year's supply of meat, which would seem to have been subsequently eaten without vegetables, or nearly so; for, 'It was not,' says Hume, 'till the end of the reign (of Henry VIII) that any salads or other edible roots were produced in England. The little of these vegetables that was used, was formerly imported from Holland and Flanders.

can shore, he was taken up by a British cruiser, and compelled to share in all the duties and hardships of a common sailor. After serving in this capacity for twenty-two months, he made his escape and landed at Boston; from whence he traveled on foot to his father's house (nearly four hundred miles), where he arrived in perfect health.' This cure he ascribes to the walk from Boston."

Queen Catharine, when she wanted a salad, was obliged to dispatch a messenger there on purpose.'

"In this state of affairs the fare throughout the country must have been pretty much on a par with sea-store diet. While such were the habits of the English people, *scurvy* was *their scourge*. But up to a much later period, we have the high authority of Sir Gilbert Blanc, that it prevailed most fatally, especially among the maritime portion of the population; among whom he estimated it to have been productive of greater mortality than all other diseases, including maritime accidents and the horrors of warfare.

"During the whole of the scorbutic reign, *phthisis* seems not even to have been a notable disease. Yet among the same race of people who have only so far changed their habits of living as to have come to esteem succulent vegetables essential to subsistence, and to prefer meats in their fresh and succulent, to their cured condition, the character of *scurvy* has become but matter of history, while consumption has become the *scourge of the nation*—the cause of one-fourth of all the deaths that occur among the whole population."

There are few remedies to which the attention of the profession has been directed that have been more variously estimated as a deobstruent in tuberculous disease than iodine, or some of its preparations. Its use in the first place was suggested, no doubt, by its well-known influence in the cure of goitre and some other glandular engorgements. But the difference between the hypertrophy of bronchocele, and the unorganized deposits constituting tuberculous disease, at once destroys the analogy, and suggests the reflection that though it was a reliable and certain remedy in the one case, it might be of no avail in the other. Accordingly it has failed to answer the expectations of its early advocates in its influence upon tubercles. Yet its undoubted influence in some cases of consumption justifies the conclusion that whatever virtue it possesses is manifest in its peculiar effect on local induration. The extensive adhesions and indurations, shown by morbid anatomy to exist in most cases of consumption, give ample occasion for the application of iodine. I have too often witnessed its beneficial effects when administered in disease of the lungs, to leave any doubt in my mind in relation to it. I prefer the iodide of potassium to any other preparation, as it combines decidedly diuretic properties, and thus adds to its other effects an influence never to be overlooked in consumption. From five to eight grains

of this salt may be given twice a day in water, or it may be added to the sirup before described. In some modifications of the disease iodine can also be inhaled with advantage. This can readily be done by any simple apparatus made for the purpose, or as recommended by Dr. McDowel, whose method is "to put a few drachms of iodine into a small vial, and suspend it about the neck like an amulet. Cork and uncork the vial as more or less of the vapor is desired."

[Introduce a small quantity of dry iodine into a glass tube, from four to six inches long and from one-fourth to one-third of an inch in diameter; insert loosely some wool or cotton in each end of the tube to prevent the iodine from escaping; and let the patient fill his lungs several times a day with air inhaled through this tube. S.]

Analogous to this, and exceedingly useful in the bronchial and laryngeal complications of consumption, is the inhalation of the vapor of hot tar-water. A strong solution of tar may be placed in a vessel convenient for heating, such as a tin tea-kettle, and a tin tube attached to the spout, of sufficient length to allow the patient to sit near the grate while the kettle is heating, and inhale the vapor from the end of the tube. Its influence upon the irritating and spasmodic cough connected with those complications, and with the chronic form of the uncomplicated bronchial affection, is comfortable, soothing, and beneficial; perhaps more so than any other remedy. It generally procures a quiet and refreshing night's sleep, and is followed in the morning by a free and easy expectoration.

Thus far, gentlemen, I have considered the great leading measures generally applicable in tuberculous consumption, without attempting to follow any particular train of symptoms which will always more or less accompany the case, and will of necessity require attention. I now wish to direct your attention for a short time to those measures which have been found useful in mitigating the urgent symptoms, and will perhaps aid in the radical change of the disease. Having thus far treated mostly upon general principles, it has not generally been difficult to give philosophical explanations of the measures recommended. It will scarcely be expected, however, in this part of our subject, that explanations of the *modus operandi* of the different therapeutic measures which may be thought appropriate will be so feasible. Our prescriptions, therefore, may in some cases have an apparently empirical character. Yet, having the sanction of a wide range of experience, I

shall bespeak for them no less confidence than others, the influence of which are more readily explained.

Aside from the radical measures already considered, a harassing *cough* will be the most uniform, and often the most troublesome symptom for which we shall be called upon to prescribe. This we shall frequently find connected with a condition of the system which a mere palliative treatment will not relieve. Among the conditions often influencing and aggravating the cough, is the condition of the stomach. The indication in such cases is at once apparent and easily fulfilled. There should be no hesitation in resorting to an emetic in almost any case of complication where its use is indicated. The influence of derangement of the stomach on the lungs and other viscera, furnishes an additional motive for the administration of emetics in this disease besides that for which it is generally prescribed. Emetics, therefore, occasionally administered where the state of the stomach requires them, though not positively curative, are yet so important in favoring the proper action of radical measures, and in relieving symptoms always troublesome, that they may with great propriety be placed among the most important means necessary to a cure.

The appearance of the tongue, the color of the skin, and the sensation in the region of the stomach, will be our main guides as to the necessity for their use. If the tongue is thickly coated, if there is a sensation of fullness with slight nausea in the stomach, and if the complexion of the skin is dark and sallow, we can scarcely go amiss in administering an emetic. But on the contrary, if the tongue presents a high-colored or red appearance, with but little or no fever, and some epigastric tenderness, emetics would be likely to do more harm than good, and in such cases should be withheld. When emetics are indicated by the symptoms described, they may be repeated from time to time during the progress of the case. The choice of emetics as a general thing is a matter of no small moment, and particularly so in this disease. Those articles should be selected that are known to be mild in their operation, and such as do not irritate or prostrate the system. An infusion of boneset and lobelia, in two tablespoonful doses, repeated every ten minutes, prepared by steeping half an ounce each in a pint of water, or the acetous tincture of sanguinaria and lobelia in tablespoonful doses may be taken in warm water and repeated as often as required. The cough will be relieved, expectoration increased, respiration become more free, and the appetite improved, after each

operation of the emetic. Offensive and unpleasant as this remedy is, I have in many cases been requested by patients to repeat it, when the symptoms returned, for the sake of the sensible relief which it affords. But when the violence of the cough is kept up and aggravated by an irritation of the stomach, a very different course will have to be pursued. In cases presenting the red tongue and epigastric tenderness, counter-irritation over the stomach, a mild farinaceous diet, with perhaps the taraxacum pills to act on the liver for a short time, will have to be resorted to until these symptoms subside. Meantime the patient must exercise as much as he can without fatigue, and very gradually return to his full diet, using as a tonic an infusion of ptelea in tablespoonful doses three times a day, and taking freely a cold infusion of althæa officinalis. In cases where the cough is aggravated by a high grade of local irritation, accompanied by fever and some pain in the side, a few cups applied to the seat of the pain and followed by hot fomentations, with perhaps an emetic, are the chief means to be relied on.

There is another condition of the system in which there will be a certain grade of irritation of an active character, accompanied by a dry, irritating cough, which will require a course of treatment different from those just mentioned. A sirup prepared according to the following formula will fulfill the indications in such cases as well as any other:

R. Sanguinaria canad.,
 Asclepias tub., āā 3j.
 Eupatorium perf. 3ss.

Steep in one and a half pints of water, strain, and add loaf sugar sufficient to make sirup as thick as honey, of which a teaspoonful may be taken every hour or two, according to the urgency of the symptom for which it is prescribed. We now and then meet with a case in which the cough is so troublesome as to greatly disturb the patient's rest, and for which no ordinary remedy will be sufficient. The following prescription will usually afford the requisite relief:

R. Tinct. Lobeliæ,
 Tinct. Opii camph., āā f3j.
 Oxymel Scillæ, f3ij.
 Aqua dest., f3vij. Misce.

Of this two teaspoonfuls may be given on going to bed. Or equal

parts of the sirup of sanguinaria just described, and paregoric, taken in two teaspoonful doses at bedtime, will answer as well perhaps, and the opiate can then be omitted, as it should be, when not *positively* required.

A diffused soreness and undefined pain over the largest portion of the chest will occasionally be met with, for the relief of which I have usually prescribed five drops of the oil of tar, three times a day, taken on a lump of sugar, and the free use of a decoction of the white-pine bark to the extent of a pint or more a day. These two remedies deserve more than a passing recommendation in the treatment of consumption. Their effects upon the system may be referable to their action on the skin and kidneys; but I have thought, from observation, that they had a particular influence on the lungs from the fact that the respiratory exhalations partake in a sensible degree of their peculiar properties, and I have often witnessed advantages so marked and decided as to leave no doubt of their favorable influence on the disease.

In the early stage of pulmonary disorders, I have witnessed decidedly beneficial effects from the persevering use of a pure article of *cod-liver oil*. But to afford any marked relief, it should be continued for a number of months. It may be taken in half-ounce doses, three times a day.

The cod-liver oil is one of those remedies the action of which upon the system is not very well understood. From the effect which it generally has, in sensibly increasing the flesh of the patient, I have been led to suppose that its beneficial influences, were, in a great measure, to be ascribed to the fuel it furnished for the lungs; thus allaying the irritation which generally accompanies that stage at which alone I have witnessed good results from its administration. (See Vol. I, page 155, et seq., and page 172, et seq.)

In the last stage of this disease and sometimes earlier in its progress, a weakening diarrhea will often require our attention. It is sometimes of a merely temporary character, resulting from the use of improper articles of food, and generally will be relieved by moderate abstinence for a day or two; but it is usually dependent upon relaxation and irritation of the bowels, and in such cases more decided measures will be required. If not profuse a decoction of *geranium maculatum* and *prunus virginiana*, say one-half an ounce each to a pint of hot water, may be taken in stemglassful doses three or four times a day. But if it is profuse and exhausting, a more efficient course will have to be taken. Counter-irrita-

tion with mustard or wilted horseradish leaves over the bowel, and teaspoonful doses of equal parts of paregoric and tincture of catechu, repeated upon every evacuation, I have found safe and reliable prescriptions. A mild farinaceous diet for a few days will also be necessary to arrest the difficulty. Or it will be preferable in many cases to use the compound sirup of rhubarb in appropriate doses three times a day, which will relieve the nausea and diarrhea. [I often prescribed the following with satisfactory results,

R. Mistura Cretæ.

Tinct. Catechu,

Tinct. Opii Camph., *āā*.

Misce. Sig. Give a teaspoonful every hour.

S.]

The hemorrhage that occasionally occurs at different stages of tuberculous disease may be but slight, and therefore create but little trouble for the physician, or anxiety on the part of friends.—But in some cases it becomes so profuse as to alarm the patient and in fact to endanger his life. This subject, however, will receive special consideration in another lecture (see *Hæmoptysis*), and I will now simply suggest in general terms the means best adapted to give relief. Where it is but slight, a few grains of salt and the free use of a decoction of *lycopus virginicus* or bugle weed, with counter-irritation over the chest, will be all that may be required. But when the hemorrhage is profuse, ligatures to the extremities, as directed for the treatment of inflammation (Vol. I, p. 537), with cups to the chest, and the internal administration of two grains of capsicum and one grain each of opium and ipecacuanha, repeated every two hours, will rarely fail to give relief.

For those cases of consumption associated with a rapid pulse, difficulty of breathing, a good deal of nervous excitement and neuralgic pains, there is no remedy so reliable as *macrotys racemosa*, (*cimicifuga rac.*) This may be given in the form of a sirup, prepared by making a decoction of the root—one ounce to the pint—and taken in tablespoonful doses three times a day; or from two to three grains of the macrotin may be administered in a little simple sirup in its place. If this should create a headache, as it does when administered to the extent of producing its specific action, it should be lessened. It is proper to remark, that the *macrotys*, or its proximate principle, *macrotin*, is a powerful remedy, having a range of application in diseases of a number of organs not equaled by many others. Its therapeutic effects are mainly exerted on the nervous system.

During the progress of consumption, though not confined to any stage, but more likely to attract attention in the later, a profuse night-sweat, usually preceded by a febrile exacerbation from the middle of the day, almost invariably occurs. In fact, it will be found upon careful inquiry to have all the general characteristics of a regular attack of intermittent fever. This may generally be arrested for a short time, and frequently for a week or two together, by the same remedies recommended for the genuine disease, and they will afford great relief to the sufferings of the patient, if nothing more. But generally the hectic fever and night-sweats, if no others of the symptoms, will return and require attention.—I have used a decoction of *pterospora andromeda* or *crawly root* with the most marked advantage, and have lately seen a recommendation, from a respectable source, of the same remedy. It acts on the homœopathic law, and given in decoction is sensibly diaphoretic, and seems to substitute the natural for the colliquative perspiration attendant on this disease. The old standing prescription for night-sweats is the elixir of vitriol or diluted sulphuric acid,—five to ten drops to be taken at bedtime,—and this often has a good effect in these cases. Whatever may be given internally, there is probably no one remedy more likely to afford relief than bathing the surface before bedtime with hot whisky and following with brisk friction. I have also been informed that this difficulty has been speedily arrested by bathing the body with cold or tepid water at any time in the night when the sweats are profuse.

I have already, perhaps, anticipated most if not all that needs to be said on the bronchial complication so often met with in the progress of consumption, and I will only remark that the treatment appropriate for chronic bronchitis is equally applicable in this case. The same remark will apply to the subject of laryngitis and its complication with disease of the lungs proper. The various local and general means recommended for the one will be suitable also for the other.

A few words are necessary on the subject of local applications to the chest. This also has been in a measure anticipated when speaking of bathing as a general remedy, and of cupping in those inflammatory complications occasionally met with. In regard to blisters and liniments,* I have so rarely witnessed any advantage from them, that I have nearly abandoned their application in most diseases, and especially in consumption. The application of a few cups followed by hop fomentations answers better and acts more

promptly upon the inflammatory symptoms that occasionally arise in this disease, and I have therefore recently relied upon this measure instead of blisters; and in the ordinary progress of the disease the bathing is believed to be far preferable to any counter-irritation that is usually applied. I have, however, seen decided advantage from the long-continued application of the common irritating plaster (*Emplastrum picis compositum*) over the seat of the disease.

The tartar emetic ointment is often productive of great irritatoin, which results in more harm than good.

Thus, gentlemen, I have endeavored to give you the soundest doctrine and the most reasonable course of treatment for consumption, which my knowledge of the disease and the advantages of an extensive experience enable me to recommend. I might perhaps interest you by referring to the thousand and one remedies that have been recommended by different individuals at different times, and that have received more or less of the confidence of some members of the profession, and more perhaps of the community. But that would be an unprofitable consumption of your time. As, however, the subject is one of no ordinary importance, it may be useful to recapitulate the outlines of the treatment which I have recommended.

The great general principles governing the treatment of consumption are to change the diathesis and promote the absorption of tuberculous deposits. These objects will be best accomplished by the largest amount of exercise in the open air which the patient can endure; by bathing the whole surface of the body, especially over the lungs, followed by friction; by wearing a brace if necessary, and by full and frequent respirations; by adopting the most nutritious and often stimulating diet—such as rare beef, fowls, eggs, milk, bread and potatoes; by the inhalation, in certain complications, of various substances, such as the vapor of tar and iodine; the use of general tonics and alteratives—sanguinaria and taraxacum, prunus and ptelea, an occasional emetic, expectorant sirups with cough-drops and mixtures; by the use of saline and mineral substances to supply the deficiency of these elements of the vital fluid; the long-continued use of cod-liver oil; by change of clothing, and in certain cases by change of climate.

[The treatment of pulmonary affections by inhalations, has from time to time attracted the attention of the medical profession since the days of Boerhaave; but I am confident it has never been

employed with the degree of confidence it merits, nor been pursued in such a systematic manner as to thoroughly test its efficacy. The idea that vapors inhaled into the lungs can only act locally and as palliatives, has seemed to be generally taken for granted; and hence such measures have not been persevered in, especially by those who perceive that the cure of tuberculosis must necessarily be effected, if at all, by remedies that produce a constitutional impression.

And here in my opinion writers have committed a radical error. It is admitted, that the constitution may be *poisoned* by aëriform substance received with the breath. The specific influences of anæsthetic agents, is obtained by inhalation. Why then may not the therapeutic operation of any remedy the medicinal principle of which can be converted into a vapor or gas, be obtained in the same manner?

I have for some years been employing inhalation, as a means of securing both the local and general impressions of many remedies that appear to be indicated in pulmonary affections and diseases of the air-passages, and must be permitted to continue to place more confidence in their efficacy when thus administered, than when exhibited in any other way, the opinions of authoritative parties to the contrary notwithstanding.

Medicines capable of being administered by inhalation are very numerous. I will enumerate a few: Acetic acid; aconite; alcohol; ammonia; asafoetida; balsams, copaiva, fir, gilead, peru, tolu, etc.; belladonna; boneset; camphor; cayenne; chamomile; cherry-laurel; chlorine; cicuta or conium; cimicifuga; digitalis; the ethers; gallic acid; gelseminum; horehound; humulus; hyoseyamus; ignatia amara; Indian hemp; iodine; ipecacuanha; juniper; lactucarium; lobelia; lupulin; muriatic acid; naptha; nitric acid; nitro-muriatic acid; opium; rosemary; sanguinaria; scutellaria; senega; spikenard; sugar; tar; tobacco; turpentine; valerian; veratrum; volatile oils; wild cherry; etc. etc.

These and many other medicines I have employed as they seemed to be indicated, in the form of decoction, infusion, tincture, etc., according to the nature of the agent, and variously combined or alternated to suit what I conceived to be the condition of the patient. The influence of some medicines can be obtained without any other preparation than that of placing them in a tube. Others more readily yield their properties when used in the form of tincture. Some require to be volatilized by heat.

I can not take space here to enter largely into this subject, but will give two formulas which I have used with gratifying results, in cases that indicated the agents they contain, and which may serve as an illustration of the manner in which this mode of treatment may be employed.

R. Infusion of Hops, iv.
Comp. tinct. of Iodine, gtt. xx.

Let the infusion be made hot, add the drops, and then inhale the vapor. The same quantity of the tincture should be added at each inhalation, which should be repeated several times a day. Make a fresh infusion of hops every morning.

R. Benzoic acid, ʒij.
Tinc. balsam Tolu,
Tinc. Conium mac., āā, fʒij.
Dilute Acetic acid,
Alcohol, āā fʒiv. M.

S. Place the inhaling bottle containing the above, in moderately hot water and inhale for a few minutes several times a day.

Mr. Max Woche of this city, has for sale inhaling bottles with gum-elastic tubes attached. In order to succeed in this mode of treatment the very best form of apparatus should be used, so that the inhalation may be as agreeable to the patient as it can be rendered, otherwise he will not take it often enough, nor persevere in its use a sufficient length of time to be benefited. Some tinctures that do not require to be heated may be inhaled through a sponge saturated with them. The sponge may be held in a common glass funnel and the air drawn through it by inserting the tube of the funnel between the lips.

S.]

LECTURE LI.

LOCAL DISEASES—CONTINUED.

Inflammation of the Heart: General remarks; General symptoms of cardiac Inflammation; Physical Symptoms; Auscultation; Palpation; Percussion.

INFLAMMATION OF THE HEART.

CARDITIS, Inflammation of the Heart proper. PERICARDITIS, Inflammation of the Pericardium. ENDOCARDITIS, Inflammation of the Pericardium.

While modern pathological research has done much to clear up the character of some affections of the heart not before accurately distinguished or understood, there yet remains much to be ascertained not only in regard to the causes of those disorders, but especially in respect to the therapeutics of this great central organ and its appendages. It may not, indeed, be difficult to describe the symptoms attendant, and the morbid appearances consequent upon the several affections of the heart, but in common with the rest of the profession, I shall have to beg your indulgence in reference to the philosophical application of remedies for their cure. Our theoretical opinions may, in some cases, have been sustained by practical results, and to that extent have justified the adoption of particular measures in the treatment of this class of diseases; but it must be acknowledged that, on the whole, very little that can be recommended as having a specific operation, has thus far been discovered. Nevertheless, we have a knowledge of some general principles to aid us in the application of therapeutic measures to these disorders, and also an experimental knowledge of the action of certain remedies on the general system, in other diseases, to guide our judgment, and to restrain that injudicious interference which the urgency of the symptoms and our natural solicitude for the patient tend to induce.

The experience of most of the older members of the profession happily concurs in recommending a judicious and discriminating incredulity of new-fangled notions and theories in this headlong and teeming age; in reprobating an impatient anxiety for the

repeated and constant use of medicine, and in earnestly impressing the danger often attending that course upon the minds of all young practitioners. Doubt and hesitation in regard to the administration of *active* measures are, perhaps, more important and necessary in the treatment of diseases of the heart, than in almost any other cases to which you are liable to be called. Disease involving an organ so indispensable to life, and the functions of which are so impossible to be substituted by the vicarious action of any other organ, implies the necessity for unusual care in its treatment.— And if additional motives for extreme caution were needed, they might be supplied by the obscurity which has prevailed, until very recently, in relation to the organic changes and functional derangements of the heart and its appendages, and the consequent deficiency of our practical knowledge of the proper management of the diseases which involve this organ.

Without further preliminaries, I propose in the present and several following lectures to discuss inflammation of the heart and its membranes; hypertrophy, or enlargement of the heart, with the opposite condition, or atrophy; and the nervous affections connected with it, which are far more common than any other diseases of that organ. It is customary to consider inflammation of the investing membrane of the heart or *pericarditis*, inflammation of its muscular structure or *carditis*, and inflammation of the lining membrane or *endocarditis*, as distinct and separate affections.— Since, however, they present essentially the same general symptoms, differing at best in no very marked manner, except in the physical phenomena peculiar to each, and since the treatment, so far as concerns the general measures usually recommended for one form of the disease, will apply to and is equally recommended for the others, I shall consider them under one general head, pointing out by the way the characteristic physical symptoms referred to.

It may be remarked that few if any diseases present a greater variety of *symptoms*, and none in which it is more difficult to determine a satisfactory diagnosis, than inflammation of the heart or its membranes. In some instances the disease probably passes through the several stages with slight and unimportant symptoms, and in others it occurs in complication with other diseases of the chest and rapidly proves fatal, without a suspicion of its true nature on the part of the friends or the attending physician. Instances, again, are not wanting in the annals of medicine where all the symptoms were supposed to be characteristic of this form of inflammation,

and yet post-mortem investigation detected no trace of the disease. It is frequently complicated with other affections of the chest,—thereby masking its true character and rendering it more likely to be overlooked. Hence, no doubt, its occurrence is more frequent than is generally supposed.

It generally commences with the ordinary premonitory symptoms common to other inflammatory affections, but the development of its active symptoms is usually preceded or immediately accompanied by a chill, and followed as usual in such cases with febrile reaction, which is proportioned somewhat to the extent of the local disorder. The pain in acute inflammation of the heart is generally sharp and lancinating, and extends to the top of the shoulder as in pleuritic inflammation, though further down the arm. The severity of the pain is always greatly aggravated by a full inspiration, and often by any change of position, or by pressure over the region of the heart between the fifth and sixth ribs of the left side. Patients feel the least pain by lying on the back, and hence that is the position in which they are generally found. A troublesome, dry, hacking cough increases the pain, and as in pleurisy, aggravates the sufferings of the patient; respiration is usually hurried, imperfect and often irregular; the features are contracted and expressive both of bodily pain and mental anxiety; there is irregularity of the heart's action, and often a sensation of fainting requiring constant fanning; the pulse is usually full and hard in the early stage, but soon becomes very small and rapid, often almost insensible at the wrist, and is generally irregular in its action. The skin is hot, except on the extremities; tongue furred and appetite wanting; urine scanty and high-colored, and the bowels costive; in short there are all the general symptoms that usually characterize other phlegmasial and febrile diseases, in which a perversion of the secretions and a morbid action of all the great emunctories of the system have been produced. Dyspnea, already referred to, is one of the most constant symptoms, and perhaps may be considered the most characteristic of cardiac inflammation. It often becomes so severe as to render articulation difficult, and respiration hurried and oppressed—in some cases thirty to forty per minute. Occasionally the disease extends to the diaphragm, giving rise to a troublesome and painful hiccup. The associated cough may arise from direct sympathy, but more generally from the extended irritation of the pulmonary structure in contact with the heart. It is fitful and irritating, without expectoration, and often painful. The

character of the pulse and certain physical symptoms are the only distinctive marks of the particular form of disease under consideration, and even these may be considered somewhat equivocal, since some of them at least coexist with neuralgic affections of the heart. In inflammation of the substance of the heart or carditis, and in inflammation of its lining membrane or endocarditis, the pulse is supposed to be more rapid and irregular, exhibiting a greatly disturbed and tumultuous action.

The *physical symptoms*, growing out of and connected with inflammation of the heart though tolerably characteristic and satisfactory when they can be recognized, are often so obscure and difficult to detect, as to afford very little reliable evidence.

It should be remarked that the action of the heart *in health* is indicated by a moderate pulsatory movement, which can be felt between the fifth and sixth ribs, on the left side. And an increase in this pulsatory movement, and perhaps a slight abnormal fullness in that region, especially in the intercostal spaces, will distinguish the diseased action from the healthy. It should also be remarked that in health, by the aid of the stethoscope or by applying the ear directly to the side, we can recognize two distinct sounds occurring regularly but with unequal intervening periods.—These sounds will be more readily perceived by placing the body in an erect position or with a slight inclination forward, so as to cause the heart to communicate its impulses more forcibly to the walls of the thorax, than it does when the person examined lies on his back. The minute shades of difference between the sounds can be more clearly distinguished by the aid of an instrument than by placing the ear in contact with the chest. The two sounds occur with every contraction and relaxation of the ventricles of the heart, one immediately following the other, and they are succeeded by a short interval of quiet. The first sound is synchronous with the pulsation of the large arteries, and nearly so with the pulse at the wrist, though minute observation will detect a slight difference. It is a duller sound and continues longer than the second, and can be best and most distinctly heard over a space of about two inches in diameter to the left of the sternum and below the fourth rib. This sound occurs during the contraction or systole of the heart. The second sound is much more jerking or quick, but more distinct than the first, and may be compared, when attentively observed, to a slight tap with the end of a finger upon the bony extremity of

another part of the limbs. It occurs during the expansion of the ventricles of the heart, or what is called their diastole, and can be most distinctly observed over the semilunar valves, at the sternal extremity of the third rib, from its lower margin upward for the space of nearly two inches.

Various theories have been advanced to explain the cause of these sounds. But the most modern views, being predicated upon more numerous and extensive experiments, may be considered as very closely approximating the truth. The sound occurring simultaneously with the contraction of the ventricles is supposed to have a complex origin, or to proceed from a combination of circumstances. The friction of the fibers of that muscular organ upon or against each other during their sudden contraction is believed to produce more or less of the sound. This is rendered quite probable from the fact that sound is emitted upon the contraction of the heart which often occurs to some extent in some of the lower orders of animals. after that organ is removed from the body, and is entirely empty, or free from blood. Another, and probably not the least important, source of the sound is the friction upon the sides of the large arteries, produced by the flow of blood as it is rapidly forced in a regular current out of the heart and through those vessels. More or less sound might also reasonably be expected from the movement of the tricuspid and mitral valves as they close at the moment of the contraction of the ventricles to prevent a return of blood into the auricles. The contraction of the auricles, so immediately preceding the ventricular contraction as to be almost one continuous act, no doubt adds somewhat to the sound recognized at this time. By such facts as these, which have been carefully observed by experiment, the systolic sound is accounted for.

But whatever cause may be assigned for the sound thus emitted, it has been satisfactorily determined that it differs very considerably in different individuals, owing no doubt in part to the difference in amount, or thickness and density, of the cellular tissue and adipose matter intervening between the heart and the instrument used in the examination. It is also found to be much influenced by the thickness of the walls of the heart, a thin ventricle naturally permitting the passage of a louder and clearer sound than a thicker one, as shown by the fact that the sound emitted by the right ventricle is clearer than that of the left.

The diastolic sound is without doubt mainly owing to the contraction of the aorta and pulmonary artery during the dilatation of

the ventricles, by which the semilunar valves are suddenly closed. This sound, like the systolic, differs in different individuals, and perhaps from similar causes. In addition to the thickness of the walls of the chest, the peculiar formation of its bony structure, by which the heart is brought more or less immediately into contact with its parietes, will materially modify the sounds emitted. They will also be greatly modified, both as regards their regularity and frequency, by the condition of the individual at the time of the examination. Thus any effort, physical or mental, which increases the vibrations of the heart will produce a corresponding increase in the sounds emitted. And in such cases the interval between the systole and diastole will be much shortened, the distinction frequently being nearly destroyed, so that they are apparently merged in one continuous sound.

As already remarked, the thickness of the walls of the chest will modify the *force* of the sounds. Upon the same circumstance will depend the *extent* to which the sounds will be conveyed and can be recognized by an examination on the surface of the chest. In a very fleshy person the sounds will not only be less distinct and appreciable but will be confined to a space much more limited than in individuals of a different formation. The same laws will modify the propagation of sound in those cases of pulmonary disease in which hepatization of the lungs has taken place. In such cases the sounds of the heart's action will be more distinct, and also be heard over a greater extent of surface than when the lung possesses its healthy and spongy condition. The impulse is thus more readily conveyed through the medium of an inelastic and solid substance than through the more elastic and yielding one.

Auscultation.—We have thus far mainly considered the sounds emitted by the action of the heart in a healthy state. Let us now consider the sounds recognized by auscultation in a diseased condition of the heart. Auscultation will discover either new and peculiar sounds, or the modification or alteration of those pertaining to health. The latter may be changed in various ways; either in frequency of repetition, the force or intensity of their action, or the regularity with which they are developed. In some cases the two sounds may be repeated so frequently and persistently as to justly mark the case as a disease of the heart uncomplicated with symptoms of other forms of disease; or one or the other of the sounds may be delayed so as to exhibit an irregularity incompatible with healthy action; or the first sound may be com-

pressed, or the contraction of the ventricles may take place in quick succession, so as to give it the character of a double sound. It is said that the systole may be repeated three or four times in quick succession, with a kind of continuous and jerking sound. This irregularity may occur in many forms of disease, as shown by the singular irregularity of the pulse at the wrist. Thus two or three systolic sounds may be heard almost simultaneously, though a difference will exist sufficient to mark the separate contractions, and then they will suspend or defer beyond the period at which they ought to occur; then again, one systolic sound may follow another at very unnatural periods for a few times, when a few others will be heard in more rapid succession. It should be remarked that these may exist with organic disease of the heart, and they may also be associated with or grow out of mere functional disorder of that organ; but when they occur with other symptoms of morbid action they acquire an importance not otherwise belonging to them.

The unnatural or superadded sounds may exist simultaneously with the natural, and may so obscure the natural sounds as to render them nearly or quite inappreciable. They are mostly denominated murmurs, or modifications of the bellows sound. The latter is so called from its being, when uncomplicated, smooth and blowing like the sound of a pair of bellows. As it is dependent upon the heart's action, it must of course partake of the irregular character of its contractions produced by alterations in some portion of that organ, or in the vessels proceeding from it. Thus it may be either double or single, of a loud or low tone; shortened or much protracted. In some cases it may be so loud and continued, like the sound of the bellows, as to obscure the natural one; and again, the sound has been compared to the chirping of a young bird, being musical and whistling. Such sounds not unfrequently become rough and broken, probably depending in this respect upon the force of the heart's action.

The bellows sound no doubt may exist without any permanent organic change in the heart, but may be produced by a merely temporary diminution of the orifice of the aorta or pulmonary artery by contraction or compression. Whether it is the result of accidental and temporary diminution in those orifices or not, the existence of the sound presupposes a change in the relative size of the heart and the calibers of the ventricular canals at or not far beyond the juncture of those outlets with the heart. And it is believed that this unnatural diminution of some portion

of the aorta or pulmonary artery near the heart, partially interrupts the flow of the blood, which is thereby pressed through this diminished aperture against the walls of the vessels beyond, with such force as to produce sound. This it is not difficult to appreciate. The pressure of blood through the narrowed aperture is like the forcing of water through the extremity of a hose-pipe, which is smaller than the pipe itself, and produces a hissing sound on the escape of the water. This temporary obstruction may result from spasmodic action, or compression from a tumor, so as to partially fill or close up the ventricular outlets, from thickening in the walls of those vessels, or the formation of a clot at the mouth of one of those openings may produce it.

The bellows murmur may be produced by another cause not very satisfactorily explained. But its existence under certain circumstances having been determined by repeated observation, the facts are not changed if the explanation is insufficient. It is well known that this sound is heard in the absence of any change or alteration in the capacity of the orifices of the heart, when from the excessive loss of blood by repeated bleedings or otherwise, the watery or serous predominates over the globulous portion of that fluid, and also in the disease called anæmia, where the same condition of the blood exists. Whether the murmur results from the excessive irritability of the heart produced by the want of the appropriate stimulus, alone furnished by the red globules, of which there is a deficiency in the condition of the blood referred to, or whether the positive deficiency in the bulk or amount of the circulating fluid, that may for a time exist in such cases, causes the excessive action of the heart usual in this condition of the blood, and thus develops the sound, is not very easy to determine (see Vol. I., p. 108). But, however this may be, the two are so uniformly concomitant as to suggest the conclusion that the murmur is in some way produced by the extraordinary action of the heart under such circumstances. This view is confirmed by the fact that any circumstance which excites undue action of the heart in anæmic cases immediately develops the sound.

The filing or rasping sounds, occasionally observed in cardiac affections are supposed to be, and probably are, produced by the flowing of blood over the surface of the diseased orifices which have been roughened by inflammation, or by the adherence of tenacious lymph, or by osseous depositions or cartilaginous formations. This modification of the bellows sound presupposes more

or less organic change in the valves or openings of the heart, and somewhat resembles the bronchial sound produced by congestion and hepatization of the lung, but can readily be distinguished by having the patient hold his breath, which of course will arrest the sound if it proceed from the lungs, but not if it is produced in the heart.

Various other sounds are described by the authorities, such as the friction sound, which is said by Prof. Wood to proceed from the rubbing together of the pericardium, roughened by inflammation, and the opposite surface of the membrane. If by this is meant that the pericardium rubs against the reflected membrane forming the external surface of the heart, and thus emits a sound, it may be probable. But if it is supposed that the exudation of coagulable lymph renders those surfaces rough and thereby produces sound, it is a different explanation from that given to account for the friction observed in pleuritic inflammation, for, in the latter case, a dry condition of the membrane is prerequisite to the sound thus supposed to be produced. I acknowledge my inability to explain satisfactorily the whole phenomena of these sounds, and I have many doubts whether the explanations usually given are sufficient.

The creaking-leather sound is said to be produced by a rough and stiffened condition of the pericardium. A churning or washing sound is said to result from an unusual or excessive amount of fluid in the pericardium. This symptom may be expected in affections of the heart connected with dropsical effusion.

Whatever the character, extent, and persistence of the sounds recognized in cardiac disorders, those growing out of organic alteration in the ventricular outlets and in the valves connected with the auriculo-ventricular circulation, will depend not only on these alterations, but also in a very remarkable degree on the action of the heart at the time the examination is made. This is very satisfactorily shown from the difference between the murmur during the systole and that which accompanies the diastole, and also the difference uniformly observed between the murmur upon the occurrence of any circumstance exciting the heart to an undue contraction, and that which is ordinarily associated with the disease.

Palpation.—Another means of determining the healthy condition and natural action, as well as the diseased action and organic changes of the heart, is by the *application of the hand* to that part of the chest directly opposite the apex of the heart. It would

appear from various observations made upon animals that the heart elongates during the ventricular contraction. This would render it more than probable that the pulsations felt at the point where the apex ordinarily belongs are owing to the force with which the point of the heart is thrust against the intercostal space and the ribs. The impulse thus produced will be most distinctly felt in ordinary cases of healthy and medium formations, when an individual is examined in an erect position, by placing the hand near the fifth or sixth rib, a little more than two inches to the left of the sternum and a little less below the nipple. The precise point, however, differs very considerably in individuals having different conformations of the chest. It also differs somewhat at particular stages of respiration, and depends upon the particular position of the individual at the time of the examination. Thus it would be found at different points in persons, the conformation of whose sides was greatly unequal. Suspended at the base with its apex hanging loose between the lungs, the position of the heart would of necessity be considerably changed or different from other cases where the two sides of the chest are more nearly equal. So also, from this pendulous condition of this heavy organ, its contiguity to the ribs would be greatly influenced by a recumbent posture upon the back. In this position the pulsations will be less distinct while the individual, by inclining forward and to the left side would bring the heart nearer the walls of the chest, and, consequently make its pulsations far more perceptible. In like manner during the act of inspiration, as the posterior extremities of the ribs are fixed to the spine, and the expansion of the chest moves them forward and upward, the increase in the cavity of the chest must of necessity be in its anterior portion, thus leaving the heart further removed from its anterior walls during the act of inspiration than when the lungs are not inflated. Hence the pulsation of the heart will be less distinctly felt during the act of inspiration than expiration. At the same time the point at which the impulse of the heart can be felt will be relatively lower when the lungs are inflated than when they are contracted.

From these facts it will be apparent that, when you desire to make a critical examination for the purpose of fully determining all the abnormal conditions, it will often be necessary to examine the patient in different positions. It should also be remarked that the physical condition of the individual, the character of the circulation dependent on the temperament of the person, the age and

other circumstances, should all be taken into consideration, as they will greatly vary the impulses of the heart recognized by the touch, in the same manner that such circumstances influence the sounds perceived by auscultation. Thus in a person of lymphatic temperament and sluggish circulation, with a deep and dense adipose tissue intervening, the impulses of the heart will be less sensible, than in persons of a different make and condition. In children and younger persons they are usually more distinct than in adults.

In the present state of our knowledge it can not be determined, beyond the influence of temperament, to what the difference in the pulsatory movement of the heart in different individuals is owing, and fortunately it is not now supposed to be a question of much practical importance. It is well known, however, that the force of the heart's pulsations, as recognized by the hand, is greatly modified by their frequency, an important fact which ought always to be borne in mind in the investigation of disease. It is also important in our examinations of cardiac disease to bear in mind the character of the respiratory movements, as we might be led to suspect the former from abnormal appearances connected with the latter. We find in health a general relation between the number of pulsations and respirations in a minute, which, as determined by various authors, is as one to four and a half. If, therefore, in our examinations we should find a marked disparity between the respiratory and cardiac movements, differing greatly from the normal relations, it should always be considered as worthy of attention, and receive its due weight in determining disease. It may be remarked, however, that a frequent or hurried respiration without a corresponding action of the heart, would not indicate affections of the latter; while a very rapid and irregular action in the heart's movements, with the respiratory action diminished in frequency, or not increased, would at once suggest the existence of cardiac affection, and should lead to further investigation.

In health, the ordinary pulsatory movements are regular and at uniform intervals, though some deviation would not invariably imply disease. In the convalescent stage of certain diseases, it is not uncommon to find a very considerable irregularity of the pulse, and in persons considerably advanced in life an intermitting pulse is a very common occurrence during the progress of febrile action. So also in a person far advanced in life, irregularity of pulse without any evidence of cardiac affection is often known. The intermission at the heart may be produced by the weakened contractile power of the

heart, but it can not be supposed to occur invariably from this cause where no cardiac affection exists. In addition to these causes of irregular pulsatory movements, are those irregularities occasionally met with in children from birth, and those so often dependent on nervous affections, when we can scarcely expect any organic disease of the heart.

Organic affections of the heart, as might be supposed, will produce very marked alterations in its impulses. Thus their strength will be greatly augmented by hypertrophy or any other abnormal development in the walls of the heart, and their force and impulse increased by any circumstances highly stimulating to that organ. In many cases its action becomes so excessive as to produce a painful sensation and a feeling almost like forcing through the walls of the chest. On the other hand the force of the impulse and the strength of the pulse at the wrist are sensibly diminished by the atrophied condition of the organ, or by any other circumstance which operates to diminish the thickness of its muscular walls, or debilitate its contractile power. This weakened condition is shown in various diseases in which the pulsatory movement can not be discovered at the wrist.

As already remarked the extent to which the impulses of the heart can be felt, either in its enlarged or contracted condition, will depend upon its increased or diminished action. When hypertrophy is associated with an excited or febrile state of the system, the impulse of the heart will be felt over the whole body, and even be extended to the bed on which the patient may be placed. In some cases its action is accelerated to such a degree beyond the natural standard as to render it difficult to distinguish between the pulsations, which often become at the wrist almost one continuous stream. But the most common deviation from its natural action is discovered in its contractions; in some instances intermitting with a sort of regularity, while in others a kind of remittent action is perceived in which one or two weak or feeble pulsations are felt, immediately followed by a more full and strong pulsation. In some cases the pulsations are quick, but not frequent; in others they have a prolonged or extended feel, and sometimes there is a kind of double impulse in which one movement follows immediately in the wake of the other, and these are followed by the usual interruption that occurs between the systole and diastole. These irregularities are by no means always referable to organic disease of the heart, but often result from sympathetic irritation or func-

tional derangement. Yet if the latter causes are allowed to operate uninterruptedly for a long time, organic change will be very liable to follow, and under such circumstances we should have reason to suspect that it was already developed. These abnormal developments have been so often observed in cases of death from other diseases, as in a great measure to deprive the organic derangements of the heart of the dread that would otherwise attach to them.

There is another sensation of a peculiar character, which is supposed to have the same origin with the bellows sound. It is that thrilling or quivering sensation felt by the hand when placed over the heart in certain diseased states of that organ, and may be compared to the sensation produced by the purring of a cat when caressed, whence it is called the "purring tremor."

Percussion.—In the investigation of affections of the heart a certain kind of evidence is afforded by percussion. This evidence may not be so direct as that afforded by auscultation, but very useful and satisfactory indications may be obtained and must of course be distinguished from percussion in its application to affections of the lungs. I suppose it is scarcely necessary to inform you that a portion of the heart lies in contact with the walls of the chest. The point of contact is in a space extending from the sternum below the fourth rib on the left side toward the nipple, of an irregular shape, somewhat prominent and nearly two inches in diameter. The solid structure occupying this space will of course, upon percussion yield a sound decidedly dull. This dullness will not be confined to a precise circumscribed boundary yielding the same resonance over its whole surface, but will gradually diminish as you diverge from the center of this space in all directions, till a well-defined pulmonary sound will be produced. The latter however, will not result from an impressive blow until you remove beyond the boundary of the heart's circumference. Though we are able to recognise a moderate degree of resonance in those portions of the lung projecting over and lying in contact with the heart, yet a critical examination by one accustomed to these shades of sound will be able to mark the boundary of the heart's position. It is hardly necessary to remark that this dullness of resonance will be greatly influenced by the position of the body at the time of the examination. Thus the nearer the heart lies in contact with the walls of the chest the more dull and obtuse will be the sound. So that when the body is erect, and the heart in its normal position, the dullness will be greater than when reclining

on the back. The resonance will be increased or diminished, according as the position removes the heart from or brings it more forcibly against the walls of the chest. The dullness is also increased out of the space occupied by that portion of the heart in contact with the walls of the chest in proportion to the extent of the disease of the lungs and pleura in contact with the heart.

Thus, then, the inferences deduced from the signs afforded by percussion are, that the gradual shading-off of the dull sound over the point where the heart lies in contact with the walls of the chest indicates a healthy condition of the lung, and an increase of the space usually dull upon percussion, indicates an increase in the size of the heart. The same phenomena will be found in cases of effusion into the pericardium. It will thus be seen that the evidences afforded by percussion are not so unequivocal as those afforded by some other methods, yet when considered in connection with the symptoms recognized by other methods, they are not to be overlooked in investigating cardiac affections.

LECTURE LII.

LOCAL DISEASES—CONTINUED.

Inflammation of the Heart continued: Diagnostic symptoms; Anatomical developments; Treatment.

INFLAMMATION OF THE HEART—CONTINUED.

Having considered the general symptoms and physical phenomena connected with inflammation of the heart, I will now detain you a short time by describing the distinctive symptoms developed by the diseased action of its several portions. *Inflammation of the pericardium* is characterized by greater dullness on percussion, with more or less prominence in the region of the heart, owing to the effusion and swelling that usually accompany it, and also by the physical signs (heretofore described) recognized by auscultation. The most prominent of these local or physical signs is the creaking sound compared to that produced by new leather, which however, seldom continues longer than a few hours and can not be considered of much importance. Another sound is described by Dr. Watson, of London, which he considers diagnostic and calls the "to-and-fro sound." It is caused by the rubbing together of "the two contiguous surfaces of the pericardium roughened by lymph." The "two contiguous surfaces" here meant are, the external serous surface of the heart and the internal serous surface of the pericardial sac. This sound is said to be heard during the contraction both of the ventricles and auricles, or during the systole and diastole of the heart. Dullness on percussion is generally more extensive than in affections of the lining membrane. The dullness usually confined to a small space over the region of the heart, and recognized by percussion in *chronic*, is considerably increased and extends over a larger space in *acute* pericarditis.

The physical symptoms of *endocarditis*, differing from pericarditis, are the bellows sound, resulting from contraction or physical obstruction, either temporary or permanent, of one or more of the

orifices through which the blood has to pass in entering and leaving the ventricles; the sawing or rasping sound, produced by a roughened condition of these orifices; and the vibratory sensation imparted to the hand when placed over the region of the heart. Regurgitation, owing to imperfect closure of the auriculo-ventricular and semi-lunar valves, doubtless often contributes to increase and prolong the bellows murmur.

The physical signs connected with *carditis* are in no particular different from those I have mentioned as present in the other two forms of inflammation of the heart.

The *anatomical* relations of inflammation of the heart have been carefully studied and described with considerable exactness by a number of eminent pathologists, in whose observations we find a general coincidence. I shall not attempt to give you any thing more than the general outlines of the subject; sufficient, however, to afford a reasonable understanding of the physical phenomena developed during the progress of the disease, and for general practical purposes. In order the more distinctly to comprehend the physical symptoms of the different modifications of acute affections of the heart, I shall describe separately the morbid appearances resulting from each modification.

In *acute* disease of the pericardium the most prominent anatomical characters which have been observed, where the disease has proved fatal, are an unnatural redness in the inner surface of this membrane, the effusion of serum more or less extensive, and the exudation of a coagulated effusion upon the inner surface. The injected condition of the vessels of this membrane rarely exhibits a very bright or red appearance, but usually inclines to a purplish or dark color. Nor will this appearance be observed uniformly over its entire surface, but presents itself in small patches, or arborescent and radiated lines more or less extensive, while the other portions of the vessels not injected retain their natural color. The well-known post-mortem changes that take place in parts affected with acute disease, afford an explanation of the fact that this membrane often exhibits much less vascularity after death than the symptoms during life would lead us to expect.

In cases of a more *chronic* character, the injected condition of the vessels is greatly diminished, and if the vascularity is still retained it has a much darker, or mahogany-like color. The appearance of the heart also becomes changed considerably, exhibiting a much lighter color than natural. The substance of the

serous membrane undergoes but little change, its thickness or consistency being very little if any altered from a state of health, though its surface exhibits a rough, and therefore a very different, appearance. When the condition, supposed to constitute inflammation of this structure, is fully perfected, a thin or watery fluid, of a somewhat clear, limpid appearance, or in some cases of a greenish or olive color, is poured out from the serous surface of this sac, and has all or mainly all the chemical characters of the natural secretion, such as coagulability by heat, in alcohol or acids, etc. In some cases it presents a bloody appearance; it is occasionally mixed with pus; and, more rarely, an effusion of pure blood through the coats of the capillary vessels takes place. The quantity of serum thrown out is often incredible, amounting in the first few days of the disease to a number of ounces, but upon the decline of the disease it often gradually disappears by absorption. But when it remains it gives rise to *hydrops pericardii*, and often accumulates to a very great amount.

Associated with this serous effusion is an exudation of a viscid and plastic character, at first of a pale-straw color, but in a short time changing to a grayish and opaque appearance, and assuming a firmer consistence. This exudation generally extends over a considerable space, often covering the inner surface of the membrane, and extending to the heart and large vessels, but occasionally is deposited in irregular patches, as seen under other circumstances in the air-passages. It is generally thin in its formation, but occasionally becomes quite thick, and exhibits on its adherent surface a smooth appearance exactly adapted to the membrane whence it proceeds, while the other surface is rough and shreddy, often exhibiting a porous or spongy appearance, resulting probably from the constant agitation it undergoes from the increasing motion of the heart.

Another peculiarity of this adventitious formation consists in its liability to become organized, differing in this respect from the deciduous formations which occur in the mucous membranes. This difference arises from their different elementary composition. The formation of organized tissue in the serous cavities and especially in the pericardium is abundantly demonstrated, not only by the existence of vessels in it, but also by becoming the seat of vascular engorgement, analogous, in all respects, to the condition of the vessels from which the effusion originally took place. This accidental formation is not only subject to distinct organization, but is

also amenable to the same organic laws that govern and control other structures of the human system. Thus the growth and formation of other foreign and even unique structures have been found connected with the membrane; such as cartilages, and even points of bone. It is also the seat of purulent accumulation, and in this, it is said, has occasionally been found tuberculous matter.

The substance of the heart is not always involved in diseases of the pericardium, except in those of a chronic character, when the inflammatory symptoms are but slight or of brief duration. But in the more aggravated acute inflammatory condition of this membrane it most generally participates, to a greater or less extent, and is found upon examination changed in its appearance. Weakened by the excessive action induced by disease of a part so closely allied to it, and embarrassed by the weight of the accumulated fluid surrounding it, the atrophied or diminished condition often observed in such cases might reasonably be expected. But when the alterations produced by disease have developed adhesion between the pericardium and the heart, enlargement and dilatation of the ventricles are usually found, and ossification of its valves, and softening of the substance of the heart, are not unusual occurrences. It is in this way no doubt, that chronic diseases and organic alterations in the substance of the heart are in many instances produced.

The morbid appearances consequent upon inflammation of the lining membrane of the heart, or endocarditis, are not as distinct and characteristic as those resulting from inflammation of the pericardium. Except the physical changes produced by the inflammatory action, the ordinary results of this morbid process are very much obscured, if not entirely effaced and carried away by the passing of the blood with such constancy and force over the surface of the diseased parts. Thus the serum, pus, and sero-fibrinous effusions, so apparent in other cases of inflammation, and productive of particular symptoms in pericarditis, are entirely wanting. In this, as in other forms of disease, redness alone is not always to be regarded as evidence of inflammatory action, as the same appearance is often the result of accumulation. But when the redness appears in irregular rose-colored or violet spots, or of a darker hue, scattered over the surface of the membrane and more particularly on the valves, or when there is a universally diffused alteration in these parts, the evidence may be considered sufficiently satisfactory.—The redness, it is said, oftener “depends on a tinging of the endocardium than on true capillary injection, and although it seldom

extends into the subjacent cellular texture, it can not be easily washed away."

In the acute form of inflammation, this membrane is rarely found much altered in structure, while in the chronic form it often becomes much more dense, and sometimes even acquires the consistence of a fibrous membrane. In a diseased condition it becomes changed from that smooth, polished and adherent character, natural to it in health, to a rough, opaque and spongy formation, considerably thickened and of a milky appearance. But in very active and acute cases, it becomes softened, with an infiltration of serum, or sero-sanguineous matter, into the subjacent cellular structure, and in some cases ulceration to a considerable extent, will be observed.

It has been said that the effusions which would naturally follow or be associated with the inflammatory process in endocarditis are generally washed away by the action of the blood upon the surface of this membrane; yet this is not always the case. Either by being very tenacious or adherent when poured out upon its surface, or by being effused under the epithelium of the membrane, deposition of lymph, sometimes in the form of distinct layers, but more commonly in the form of separate granules of various sizes, up to the bigness of a small bean, frequently takes place. These morbid deposits, however, do not appear indiscriminately over the whole surface of the endocardium, but manifest a striking preference for the valves of the heart, and especially for the borders of those parts, and are often clustered together. They usually have the appearance of, and no doubt truly are, organized growths or formations of irregular sizes and shapes. Analogous to these are the "globular vegetations" described by Laennec, of a more regular and spherical shape, of a pale straw color, and inclosed in separate cysts; "varying in size up to the bigness of a pigeon-egg." They are of rare occurrence.

A result of chronic disease of this membrane by no means uncommon, is the formation of osseous and cartilaginous depositions, and fibrinous collections, most generally found in the hollows around the "auriculo-ventricular" orifices and valves. They occur mostly at an advanced period in life, or at least after middle age; though they have been observed in younger persons and even in children. Thickening of the whole membrane frequently occurs, exhibiting a corrugated, opaque, and light yellow or milky appearance. In such cases it has the tenacity and consistence of tendon, or a cartilaginous hardness; it often nearly fills up the auriculo-ventricular

and arterial orifices through which the blood is forced with great difficulty, thus giving rise to hypertrophy and dilatation, or some other organic disease of the heart.

The *diagnostic* symptoms of this affection have already been referred to, and I will only repeat that the bellows murmur, the rasping or sawing sound, and the vibratory sensation felt by the hand when placed over the region of the heart, with an irregular and intermittent pulse, are those upon which reliance may be placed.

Concretions of a fibrinous character—probably of the fibrin of the blood—not, however, as peculiar to inflammation of the heart or its membranes as to other forms of disease unconnected with heart affections, are often seen in post-mortem examinations partially filling up the aortic outlet and extending into the cavity of the heart. They are sometimes quite adherent, but are often readily drawn out without much apparent attachment. They are frequently entangled with the columni of the heart and tendons of the valves. Adhering at first by the medium of coagulable lymph, as they become harder and more dense by the absorption of the more fluid particles, their adherence is promoted by the formation of vessels from the contiguous surface, which diverge and ramify in them until finally they become perfectly organized structures. In this state they have changed from the fleshy color, peculiar to their early state, to a gray color and to an elastic, fibrinous and dense character.

Inflammation of the substance of the heart is of very rare occurrence, and therefore the morbid anatomical appearances connected with it have not been so fully described as in other forms of cardiac affections. Several instances, however, have occurred in which an opportunity was presented for this purpose. The case related by Dr. Latham of London, was one of this character, and presented well-marked evidences of rapid cardiac inflammation. The whole heart was tinged with blood in spots of a dark color, and its muscular substance softened. The ventricles when cut into were found to contain small portions of pus which oozed out from the muscular fibers. It would be supposed that the morbid appearances would be in proportion to the extent and violence of the inflammatory action. The accumulation of pus to a considerable extent in a distinct cavity or abscess has been known in many instances, and when the inflammation existed only in a circumscribed portion of the heart, abscesses have been found which resulted in the production of ulcerative absorption. This more

frequently occurs on the internal surface than its external parts, extending in some instances deep into the substance of the heart.

The question in regard to another result of inflammatory action in the substance of the heart—so common in less highly organized structures—to wit, *mortification*, has been one of some interest. It is now pretty generally conceded that it does occur. Softening of its structure is another result, occurring either in connection with hypertrophy or dilatation of the walls of the heart, or independently of any other affection. This condition may be confined to a portion or extend through its entire structure, and produces a very relaxed or flaccid state of the organ, so that it can be torn with great facility, and the finger can be thrust through it as through wet brown-paper. The color of the heart in this disease is different in different cases. Most commonly, however, it is a deep red; but occasionally a lighter red, and then again a more dark or mahogany-like color; while in other cases it has a brownish, and sometimes even a grayish or pale yellow tinge.

This condition of the heart often occurs in connection with other affections, such as low and malignant grades of fever, and chronic disease of the lungs, but whether in these cases what is understood by the term inflammation is the cause of that condition is a matter of doubt, notwithstanding such is the opinion of most modern pathological writers. Unfortunately, however, for the progress of medical science too much importance has been attached to the revelations of the scalpel in post-mortem examinations. The symptoms, if any exist in purely cardiac affections, have not yet been determined. I may remark in this connection that induration, like that of softening, is at present believed to be produced by inflammatory action. It rarely affects the whole organ, but is confined to a part of it, and is usually associated with hypertrophy. The degree and extent depend upon a variety of circumstances not now necessary to be considered.

The *treatment* of the inflammatory affections of the different parts of the cardiac apparatus, even if we were able to distinguish the particular portion or structure involved, is essentially the same. In other words the indications are the same, whether the inflammation is located in the pericardium, the endocardium, or the substance of the heart proper. In the first place, if the case is accompanied by much pain, one or two large cups and scarification should be applied. The cups should be made to draw thoroughly, and two or three ounces of blood taken away directly over the region of the heart,

in order to produce an extensive revulsive effect. This may be repeated, during the continuance of the active symptoms, two or three times, and followed each time by frequent applications of the hot hop-fomentations to the affected part.

In regard to general blood-letting in this disease Prof. Wood says, "it is not to be employed indiscriminately and unsparingly in all cases." "Great loss of blood indirectly stimulates the heart." "The blood is rendered so thin and watery that it is incapable, as ordinarily distributed, of supplying the wants of the system;" "and such are the sympathies of the heart that a sense of this deficiency, transmitted everywhere from the periphery of the circulation to the nervous center, excites, on every occasion calling for an increased expenditure of blood, excessive action in that organ, in order, by a more rapid current, to compensate for the defective quality of that fluid." If the learned author had gone one step further and said — what I think has been fully demonstrated to be the fact — *that it also increases the local engorgement*, all the facts would have been stated, and I should have given my entire assent to the doctrines set forth. It is for these reasons, and others given in a former lecture, that I object to general blood-letting in this as in other cases.

The small amount obtained by local bleeding, and the direct influence thus exerted on the disease, render cupping a remedy at once unobjectionable and effective in the treatment of inflammatory disorders. There are few individuals so deficient in blood, or so sensitive to its loss, that they will be in any way injured by losing the small amount usually taken, or required to be taken to afford relief, by cupping. And consequently we run no risk of adding to the local engorgement by impairing the due proportions of the elements of the blood — so indispensable to free and healthy capillary circulation — while the relief experienced is always direct and often complete. This can not be said of general blood-letting, since the well-determined influence of that measure, as Dr. Wood says, is to increase the watery portions of the fluid, and diminish its more vital principles — the red corpuscles — and thereby diminish its capacity for free circulation through the capillary vessels. It is true, a temporary calm often follows the general abstraction of blood, but while this is manifest, careful observation has abundantly shown that it increases the local capillary engorgement without curing the disease or in any way removing its cause. It is not curative, says Dr. Tweedie, but only *TENDS to a favorable termination*.

Simultaneous with the measures just recommended a thorough antibilious and hydragogue cathartic should be given. One that will operate speedily and freely will afford more immediate and permanent relief than almost any remedy admissible in this disease. In this way an amount, more than equal to the quantity of blood, that could at one time be safely taken, may be removed from the mass of the circulating fluid, without in any way diminishing those vital elements which are tardily formed, while the gross and effete materials always abounding in disease, will also be carried away; and thus the vital elements of the blood will be left free and unembarrassed, and better adapted to perfect movement in those minute vessels constituting the seat of all inflammatory diseases. Theory thus corresponds with well-ascertained facts.

It may be necessary, as it often is in other diseases, to repeat the cathartic during the continuance of the disease, though so large or thorough a dose as the first will rarely be required. The antibilious powders of the Eclectic Dispensatory, in teaspoonful doses, mixed with one-fourth of a grain of podophyllin and a drachm of sup. tart. potass., forms a most thorough and at the same time mild cathartic for the first dose; it should be repeated every few hours if necessary, until its full action is experienced, and it may be given in less doses through the course of the disease if required. But when a bare cholagogue aperient only is required, the pill—often heretofore prescribed—composed of the alcoholic extract of taraxacum, podophyllin and leptandrin, is much less offensive to a sensitive stomach, and is more easily taken. In fact this pill fulfills the purposes for which blue mass and colocynth have heretofore been prescribed by the profession.

Another important measure—never to be overlooked in inflammatory diseases—exercising important curative as well as palliative influences on the disease, is free bathing of the surface with warm broke-water and whisky; or when there is great heat of the body I have often seen the best effects from the application to the chest of a towel wrung out of cold water, and changed every two or four hours. After the force of the circulation has been somewhat reduced by the application of the cups, the free and full action of the cathartic, and the modifying influence of general bathing, the patient should then be relaxed by the depurating influence of a general and thorough perspiration. For this purpose the compound tincture of serpentaria should be administered in drachm doses and repeated every two hours for two or three times, until its full

effects are realized. The tincture should be given in a decoction of *sanguinaria* and *asclepias tuberosa*, in the proportion of one drachm of the former to an ounce of the latter in a pint of water, and in tablespoonful doses every hour. In addition to its diaphoretic action, the *sanguinaria*, when combined with the *asclepias*, has a sensible influence in diminishing the action of the heart. It is also generally conceded to have more or less effect on the glands connected with the bowels, particularly the liver. This general perspiration should be continued for ten or twelve hours, when it may be partially diminished; though a gentle moisture should be kept up by the use of the decoction as long as the inflammatory symptoms continue. If restlessness and want of sleep should occur, a reliable prescription will be the diaphoretic powder composed as follows:

R. Camphor, ʒiij.
Opium, ʒi.
Ipecacuanha, ʒij.
Sup. Tart. Potass., ʒj. M.

This should be given in eight or ten grain doses, and repeated as occasion may require.

In those cases resulting from translated rheumatic affections, cups should be freely applied to the spine, and wine of colchicum and tincture of *sanguinaria*, of each equal parts, should be given in drachm doses every four hours, until their specific influence is discovered on the action of the heart, and the cathartic effects of the colchicum are experienced to a sufficient extent. These measures should not, however, be substituted for those before directed, but administered in connection with them, or such of them as the circumstances of each case seem to require.

By pursuing this course with more or less activity, and repeating according as the symptoms are more or less persistent, and at the same time preserving, so far as practicable, entire quiet both of mind and body, and using a diet of the most simple and unstimulating character, I have every reason to believe that most if not all the advantages will be realized which can be expected, in the present state of our information pertaining to these affections.

Following upon the decline of the more active symptoms of the disease, we occasionally meet with a case of effusion into the pericardium; or, in other instances, a chronic disease of the valves or openings of the heart, heretofore described, will take place.—Under such circumstances, general alteratives and counter-irritation

will constitute the main features of their treatment. The common irritating plaster, worn over the region of the heart for a number of weeks, or perhaps the application of an issue in lieu of a plaster, will be found to produce a very salutary effect. The compound sirup of stillingia, with the iodide of potassium, in appropriate doses, are valuable alteratives and diuretics. The excessive action of the heart should be partially controlled by the use of the tincture of digitalis and sanguinaria, in drachm doses three times a day. I have found the sanguinaria a very valuable remedy in all those diseases in which excessive action of the heart was a prominent symptom, or where there was evidently a loss of action in the absorbent vessels. The tincture of veratrum viride is specially applicable in this disease.

LECTURE LIII.

LOCAL DISEASES—CONTINUED.

Hypertrophy and Dilatation of the Heart: More frequent than most other Cardiac affections; Morbid conditions; Physical signs; Complications; Distinction between Hypertrophy and Dilatation; Causes; Prognosis; Treatment. Nervous affections of the Heart: Palpitation; Description; Causes; Diagnosis; Treatment.

HYPERTROPHY AND DILATATION OF THE HEART.

It is not my intention to discuss at any considerable length the character of these disorders. By the term hypertrophy is understood a mere abnormal growth or increase of the muscular substance of the heart,—while dilatation implies an expansion of the ventricles, produced by the thinning of their walls and a consequent augmentation in the dimensions of the cavities. It may also occur in connection with atrophy. Hypertrophy and dilatation may exist separately or together. Augmentation of the substance of the heart may take place without any increase in the size of the cavity, or dilatation may accompany the excessiv growth.

These difficulties have presented themselves in my practice more frequently than any other disorders of the heart, except perhaps, the nervous affections connected with that organ.

The morbid conditions presented by these disorders are such as would naturally be expected. In simple hypertrophy there is only an excessive growth in the muscular fiber—not a multiplication of muscular fibers, but an increase in their size—resulting from increased nutrition, without any apparent change in the texture or substance. The effect of this abnormal growth upon the cavities of the heart will be different in different cases. In some instances the walls of the heart will be simply thickened, without any increase or diminution of its cavities; in others the walls will be augmented in size with the corresponding cavity dilated; while again, the dimensions of the cavities will be diminished somewhat, in proportion to the thickening of the muscular walls. This unnatural increase is sometimes, and in fact most generally,

confined to the walls of one ventricle, and this most frequently the left; the auricles rarely participating even when the other parts become greatly enlarged. Instances have been observed where the hypertrophy was confined to a small portion of the heart, as to its apex, base, or the septum of its ventricles, etc.

Hypertrophy of the heart increases its density, so that it exhibits a more firm and generally more red condition than natural, and presents the character usually indicative of induration, though this is by no means a uniform attendant, as softening of the muscular structure is no uncommon associate of cardiac enlargement.

This disease is usually *caused* by long-continued and excessive accumulation of blood in the cavity, resulting from disease of the semilunar valves, or diminished condition of the ventricular outlets, associated with increased muscular action as a consequence of this obstruction. It is therefore usually a secondary affection, dependent upon some disease previously existing in this organ. As a natural consequence of the increase in its muscular structure, its capacity for contractile action is proportionally developed. Though this capacity may be supposed to exist, it does not follow that it should of necessity be constantly exercised, for it may remain latent, or be held in reserve for appropriate emergencies. Hence in some cases, when the system is quiet and composed, very little unnatural action will be observed in the heart's contraction. But when there is great obstruction in the outlets of its ventricles, there will be a more labored and tumultuous action. The blood will then be thrown with greater force and velocity to the different parts of the system, and thus produce, when the obstruction is confined to the left ventricle, a strong, full and bounding pulse, headache, bleeding at the nose, and if there is a weakened condition of the cerebral vessels, apoplexy; but if the right ventricle is the seat of the hypertrophy, another set of symptoms supervenes, such as dyspnœa, pulmonary congestion, and œdema, with a blue appearance of the lips and face resulting from the imperfect capillary circulation in the pulmonary tissues. The capillary engorgement produced in such cases results in part, no doubt, from the increased *amount* of blood thrown through the pulmonary and systemic channels; yet it is mainly owing to the unnatural *force* with which the blood is impelled to the capillary vessels, by which the resisting power of those tubes is weakened.

The *physical signs* of this disease are increased impulse of the

heart's action, as felt on the walls of the chest, diminished sound upon its movement, and increased dullness upon percussion over a larger space than usual in the region of that organ.

As the disease itself progresses, its *characteristic symptoms* will be gradually manifested. The patient will complain of dyspnœa, palpitation and other slight symptoms, at irregular and indefinite periods, and they will be devolved perhaps by slight causes, such as imperfect digestion, over-exertion, or mental excitement. In this condition the patient is generally unable to take any great amount of exercise, especially of an active kind, such as running, ascending a hill or a flight of stairs, etc., though it is no unfrequent occurrence that the feelings above described follow the first exertions, and then soon subside as the exercise is continued. The patient may continue in this condition for some length of time, or even for many years, without any marked evidences of cardiac affection, which however are very liable, sooner or later, to be more or less developed. I have seen a few cases where the heart became preternaturally enlarged without any other evidence of disease except the mere increase in the volume of its muscular walls. Usually however, it not only produces the symptoms before mentioned, and their gradual aggravation, but it also produces, especially in young subjects, a sensible throbbing felt by the hand when applied to the seat of the disorder, and often a real deformity by projecting the ribs and sternum beyond their natural line. I have witnessed a number of well-marked cases of this description.

In some instances severe, sharp, and shooting pains, extending into the left arm, similar to those of angina pectoris, will occasionally be felt, associated with a sensation of weight and unnatural oppression in the region of the heart and epigastrium. The pulse is always more or less affected in every stage of this disease; in the early periods it is generally more full and strong than in health, while dizziness or sudden and severe paroxysms of headache, are often experienced, with ringing in the ears, a flushed and often swollen condition of the face, a prominent and suffused state of the eyes, and frequently bleeding at the nose; and in the advanced stages of aggravated cases, feelings of drowsiness and stupor come on, which terminate in apoplexy. Sometimes the pulse is soft and weak at first, and either remains so or subsequently acquires more energy. There are apt to be paroxysms of palpitation, but with this exception the frequency of the pulse is not often much affected

in the beginning. At a later period the pulse is generally irregular, and in some cases is intermittent.

The lungs are very liable to become involved during the progress of the disease, partly in consequence of the force with which the blood is propelled into them. The capillary vessels thus become weakened, and pulmonary congestion is very apt to take place. Following this condition, more or less extensive serous effusion into the cellular substance of the lungs, the air-cells, and in some instances into the pleural sac, will be found to exist. This condition must of necessity produce considerable disturbance, and often serious embarrassment, in the functions of the lungs. Dyspnœa and cough, with expectoration often very copious, will be likely to occur under such circumstances, and hemorrhage either active or passive is not unfrequent. If the affection is associated with a tuberculous condition of the system, genuine phthisis, with all its characteristic symptoms may be rapidly developed.

Other organs of the body almost of necessity soon participate in the disturbance thus existing in the great central organs. The blood, failing to be appropriately distributed and properly changed in its chemical qualities, becomes loaded with carbonaceous and other effete or morbid matters, and as a matter of course, deranges generally the organic functions. Hence we find congestion of the stomach and liver, and often of the bowels, and torpor of the kidneys usual accompaniments of this disease. The condition of the blood referred to will be shown by the appearance of the capillary circulation on the surface of the face and extremities, which often become purple and œdematous. This œdematous condition generally commences in the feet, but will frequently be soon followed by more general dropsical symptoms; the entire limbs will assume an œdematous condition, which will extend to the body, and finally to the cellular membrane over the entire system. Nor is this serous effusion confined to the cellular structure of the system, but will be found, in extreme cases, filling the large cavities of the chest, abdomen and pericardium. As a matter of course, in this condition, the urinary excretion, becomes scanty and high-colored, and the skin is dry, and often toward evening above the natural temperature. The shortness of breath becomes more severe and often distressing, the fits of coughing more frequent and troublesome, until, with the difficulty of breathing and the irritation from the cough, the patient is unable to lie down, and therefore

generally sits up altogether, inclining forward, his head resting on the back of a chair, distressed with a sense of impending suffocation, his whole body agitated, his chest heaving with efforts at expansion, and an appearance of inexpressible suffering and distress depicted upon his countenance. Thus the disease goes on gradually increasing in the severity of the symptoms; the appetite fails; the vital forces are at length exhausted, and the patient sinks into profound stupor and insensibility, and dies.

As different modifications of this disease may exist without any corresponding symptoms during life, I shall not attempt to describe them all. It will be proper, however, to notice some of the peculiarities which distinguish *hypertrophy* from *dilatation*. These depend mainly on the character of the circulation. But as the two conditions frequently coexist in the same case, we are oftentimes able only to infer their existence from the blending of the characteristic symptoms of each. As it is the contraction of the left ventricle of the heart that sends the blood over the body, a more vigorous and forcible impulse of the systemic circulation will always exist in hypertrophy of that ventricle without dilatation. The other main peculiarities will be a full, hard and bounding pulse, with a kind of agitation or jarring of the whole system at every contraction, a general appearance of health and vigor, and frequent attacks of vertigo, headache and bleeding at the nose.

The physical symptoms will differ with the degree of enlargement. If the latter be slight, the dullness on percussion in that region will be but little changed from that of health; while if the enlargement is extensive the dullness will be proportionally increased. But in consequence of the thickening of the walls of the heart, the sounds emitted on auscultation will be sensibly diminished. The first sound will be greatly prolonged and considerably obscured, and even in some cases will be scarcely recognized at all, while the second sound will be also more feeble and the interval less distinct.

But when hypertrophy is associated with dilatation there will be a less vigorous action of the heart, a weaker pulse, and less of the general appearances of health and strength. The physical symptoms will also be considerably different. The field of the heart's impulse, as recognized by the application of the hand and by percussion, will be considerably increased, and, as I before said, there may be a sensible enlargement or projection of the sternum and ribs; while the sounds of the heart will be heard more distinctly in consequence

of the diminished thickness of the walls of the ventricle, and will be audible over a more extended space. The sounds will also be often heard by patients themselves, especially upon the occurrence of any circumstance productive of undue cardiac action. The diseases of the valves associated with these modifications of cardiac affections will produce the sounds on auscultation peculiar to each. The difference between hypertrophy of the left ventricle and that of the right is not always easily recognized. But since the latter portion of the heart is concerned in the pulmonary circulation, it is reasonable to suppose that the symptoms growing out of hypertrophy of that part would involve the functions pertaining to the lungs. Hence in such cases dyspnœa and pulmonary congestion, with the reflected appearances connected with it, will be developed. Asthmatic symptoms will occasionally be observed, as well as the want of healthy capillary action consequent upon a want of the change produced on the blood by the healthy action of the pulmonary circulation. The face will be swollen, and the lips and fingers blue or purple. The impulses of the heart in the general circulation will be wanting, and the general circulation itself will be affected, though indirectly, from want of a proper action of the lungs. The physical symptoms are very similar and difficult to distinguish; the main distinction depending upon the circulation and its influence on the general system.

The distinction between dilatation of the heart proper and hypertrophy depends on the action of the heart, the state of the circulation, the impulses recognized by auscultation, and the dullness on percussion in the region of the heart, which is extended over a greater space in the latter than in the former disease.

The weakened force of the heart's action in dilatation, resulting from the relaxed and attenuated condition of the muscular fibers, produces a weaker and less sensible impulse, as manifested by a small, soft and weak, but rapid and often irregular pulse; and in consequence, also, of the diminished thickness of its walls, less impediment is offered to the vibration of sound, and therefore the contraction of the ventricle will be more distinctly heard and that over a larger space. So that the weakened condition of the general circulation is associated with a long train of symptoms, such as: small, frequent and irregular pulse; a feeling of general debility; frequent sensations of fainting and dyspnœa; a pale and often livid countenance; purple lips and often dark appearance of the nails and fingers; an asthmatic condition of the lungs with a tight or

strictured cough; drowsiness, with both mental and bodily inactivity; and finally, œdematous and dropsical effusions, and all the successive symptoms, till death closes the scene.

Causes.—There are many things capable of producing hypertrophy and dilatation of the heart; both being produced in some instances by the same cause and at the same time, or the one condition aiding in the production of the other. Thus whatever is calculated to produce and keep up a long-continued and excessive action of the heart, tends to weaken its power and relax its muscular fibers, which thereby offer a continually diminishing resistance to the excessive action, and dilatation follows. This effect is very liable to be produced when there is no great constitutional vigor of the system, and it will usually be found that the relaxed and weakened condition of the general system—so universally attendant upon this disease—is not produced by it, but is the predisposing cause of that affection. But when the actual increase in the muscular fibers of the heart coexists with dilatation or enlargement of its cavities, a mixed condition of the general symptoms will be found to obtain. Neither the vigorous and powerful general muscular developments that characterize those constitutions affected with pure hypertrophy of the heart, nor the loose, weak and frail organization of the fibrous tissues peculiar to those affected with dilatation alone, will be observed. This mixture of symptoms appears to be most commonly connected with the disease, and hence most of the cases met with are found to have both hypertrophy and dilatation.

The fact that whatever produces long-continued excessive action of the heart is favorable to the development of hypertrophy, accords with the general principle that great and continued muscular action in any set of muscles produces a corresponding action in the nutritive function, and a consequent increased growth and power in those muscles. This well-established principle applies to the heart equally with any other muscle or set of muscles, of the human body. Accordingly we find the most common exciting cause of hypertrophy to be excessive or long-continued muscular exertion of any description. So also any other influence calculated to produce and keep up unnatural action in the heart will have a similar effect, such as excessive sensual indulgences, very stimulating food, intoxicating drink, prolonged mental excitement, etc. Rheumatism and gout are also said to be among the causes of this and kindred diseases of the heart, and it is reasonably supposed

that irritation extended to the heart from chronic diseases of its investing or lining membranes may produce this affection. So also prolonged disease of the cardiac valves may result in an extended irritation of the muscular substance of the heart, though it is more probable that valvular obstructions affect the heart by requiring increased efforts to force the blood through the narrowed apertures, which usually exist in such cases. This is peculiarly the case when there is contraction, from any cause, in the mouth of the aorta. The same causes operating on a system constitutionally weak and relaxed will produce dilatation of the ventricles of the heart, and this condition of the system must be taken into consideration when searching for the evidences of dilatation.

Prognosis.—The diseases under consideration are the most common affections of the heart, and fortunately, if not connected with serious derangement of the valves or of the muscular structure, may be considered as admitting of great amelioration if not susceptible of entire and radical removal. I have observed these affections more frequently among the young than the aged, and have found that they could be easily arrested, and as a general thing entirely cured, even to the reduction to a natural condition of a considerable projection of the ribs and sternum. This result, in one case which I especially recall, could not have been referred entirely to the suspended growth of the heart and the advance of all other portions of the system, since the patient in that case was nearly matured, though still young. The means employed in the cure of the case were predicated upon the principle that *rest* is necessary to diminish the size of an organ.

It may therefore be said that hypertrophy and dilatation are generally curable, but that the prognosis is decidedly unfavorable when they are connected with other and more serious affections of the heart, such as softening of its structure or organic derangement of the valves, or with dropsical effusions in the pericardium, or extensive disease of the lungs producing dyspnœa and asthmatic affections. It is also unfavorable in cases unconnected with more serious diseases, where the patient is considerably advanced in life. Such cases, however, may linger on for many years, or until they become connected with other affections, before they prove fatal.

Treatment.—In preparing for the treatment of these modifications of cardiac affections, the prime consideration is to obtain a clear insight into the cause of the disorder. Without this, our practice will be empirical and uncertain, and may be eminently unsuccessful,

while with it we shall have a clear conception of the indications to be fulfilled, and a reasonable prognostication of the issue of the case.

For these, as for most other disorders, whether of an inflammatory character or not, it is notorious that the authorities generally recommend blood-letting as the first and most important measure. Without stopping again to discuss this subject in full, I would merely ask with what show of philosophy general blood-letting can be advised, either as connected with the cause of those disorders or with the indications which common-sense and even the book authorities often point out as necessary to be fulfilled? Where among the ordinary diseases, or even those of an inflammatory character, can we be directed to one in which excess of blood is assigned by any authority as its cause? If, then, the quantity of the blood, or even its quality, has borne but a secondary part in producing the disease, what principle of philosophy or physiology can be invoked to sustain the practice? And if it is not even claimed that disease is mainly produced by those influences, how can it be claimed that general blood-letting can remove the cause, and what shall hinder the conclusion that it is not a curative measure? It is very true that patients recover after being repeatedly bled. So they often recover when they are not treated at all, and frequently when they are otherwise badly treated. Yet it should not be said in either case that the remedies applied were instrumental in the cure. So far as I have had the opportunity of comparing blood-letting with other remedies in the treatment of disease, the advantage has been greatly against the former and with the latter.

Here, then, we have a disease originating from various causes, all, however, producing similar effects on the general system, and on the heart in particular. If it has been brought about by long-continued and excessive exertion, whether in connection with business or pleasure, it will be indispensably necessary for the patient to change the habit or refrain from the practice. If it has arisen from the habitual use of stimulating articles of diet or spirituous drinks, the patient should be directed to abstain entirely from every thing of the kind, and should be confined to a plain, simple, and unstimulating diet. And so of every thing else that we can discover has had an influence in deranging the system and producing the disease.

The cases that have come under my personal observation were

mostly those of dilatation alone, or dilatation connected with hypertrophy, and as the results of my treatment were quite successful and satisfactory, I probably can not do better than to describe the condition of the cases, and the course I pursued. The first case was that of a young man eighteen years of age, of a loose and frail muscular development, who had been raised on a farm, and for a few years past had performed physical labor far beyond his ability to endure. His case presented symptoms of dilatation with slight hypertrophy; pulse excited, intermittent and irregular; hands clammy and cool; face slightly bloated but pale; lips by turns livid, and slight paroxysms of dyspnoea; bowels costive, and urinary secretion scanty; indisposed to much exertion, and rather inclined to be sleepy; tongue covered with a white coat, and appetite deficient. As there were no physical indications of valvular difficulty, and his system gave evidence of general relaxation and debility, and as the only exciting cause that could be ascertained was over-exertion, I directed that he should immediately change his habits in this respect, and use regular but moderate exercise in the open air. I also put him upon a plain but nourishing diet, and upon the use of general alteratives and tonics.

Having previously, on several occasions, obtained decided advantage from the use of the *euonymus atropurpureus* (wa-hoo—Indian arrow) in the form of a sirup, I concluded to administer that article in the present case, and in order to diminish the excessive action of the heart, I added *sanguinaria* to it in the following proportions :

R. *Euonymus atrop. rad. cort.*, ʒij.

Sanguinaria, rad., ʒss.

pulverize, and make into a quart of sirup by boiling in water, and then adding a pound of sugar and a gill of brandy. Of this the patient was directed to take an ounce three times a day, increasing gradually till its aperient effect was produced, and then continued in sufficient doses to regulate the bowels. The *euonymus* I have no doubt was well calculated to fulfill a number of important indications, being, at the same time, a mild cathartic, an active diuretic, and among the best of tonics, without exciting the action of the heart. The *sanguinaria*, as is well known to the profession, exerts a sedative influence on the heart's action, and a stimulating influence on the absorbent system. And thus the leading indications of the case were fulfilled after removing the original cause of the disease. The patient was also directed

to bathe his feet in salt water every night, and rub the whole surface in broke water and whisky before going to bed. His diet was limited to a small amount of animal food with farinaceous vegetables.

As his prospect for physical labor, such as is required to carry on a farm, were cut off, he concluded to go to school and acquire an education, sufficient at least to answer the purposes of a country school teacher. In doing this he was cautioned to be particular not to confine himself improperly, nor to fatigue himself with study. He was directed also to take regular but moderate exercise, such as walking or buggy-riding, and to be very particular not to over-exert himself in any way. He was told that he would have to persevere with these several measures for a year or two, with such alterations as the modifications of the disease might from time to time suggest. Under this course, his tongue soon cleared off, the urinary secretion became free, the bowels regular, and the circulation was much improved. And by persevering in this course for a year and a half, without any important change, occasionally suspending the medicine for a week at a time, his symptoms all disappeared, the projection of the sternum and ribs considerably diminished, and his general health was greatly improved.

Other remedies might be suggested to fulfill important indications presented in some cases in this disease. When there is an impoverished state of the blood, a more generous diet may be allowed, and chalybeates, conjoined with the tonics already recommended, should be prescribed. Or when aperient and diuretic effects are not necessary, an infusion of the wild-cherry bark possesses advantages not found in many other articles of this class. As a substitute for this, and perhaps acting with even more vigor on the circulation, the tincture of digitalis in from fifteen to twenty-five drops three times a day may be given: Opiates are generally objectionable, as they tend to lock up the secretions, and should not be used unless there is an imperative urgency for an anodyne, and even then a substitute will usually be found in the hyoscyamus and asafœtida. But when mere nervousness is the main indication for this class of remedies, the use of the valerianate of quinia will answer the purpose as well perhaps as any other. Or the decoction of cypripedium and scutellaria, in wineglassful doses, I have often prescribed with great advantage.

Another case came under my observation which presented less marked evidences of dilatation, but better defined symptoms of hypertrophy, though sufficiently mixed to render the treatment of a more antiphlogistic and less tonic character. In this case there was a better development of the muscular system, a firmer build, and more distinct indications of muscular growth of the heart. The pulse was full and hard, and a sensible shock was given to the system; there was a slight bellows murmur heard in auscultation, indicating valvular disease; the complexion was florid; and there was only a slight enlargement in the region of the heart, but a greater or more extended dullness on percussion. For the treatment of this case a stricter regimen, occasional moderate cathartics, and frequent mild aperients were prescribed, while the patient was allowed less exercise till the more active symptoms were subdued, when he was put upon the same sirup directed for the first case.

But in cases of hypertrophy unconnected with dilatation, presenting appearances and symptoms of great muscular vigor and general sanguineous plethora, a very different course of treatment will be necessary. If there is considerable pain in the heart, it may be advisable to apply a few cups to that region, followed by the application of an irritating plaster; and to administer a pretty free cathartic—one that shall produce a full and free hydragogue effect upon the system. This will be especially necessary if the tongue present a white and furred appearance, and the bowels be torpid, as is generally the case. The deficiency of the urinary secretion, usually attendant upon this difficulty, suggests the use of equal parts of the supertart. potassa and the compound powder of senna and jalap, in two or three drachm doses, and repeated if necessary until its full effects are produced.

It may be necessary to confine the patient to entire quiet for a short period, until the fullness of the system can be relieved, and the tension and arterial excitement which often accompany the case, can be subdued by cathartics and low diet, which should always be instituted in the early stage. But after these more urgent and active symptoms have been relieved, the patient should be directed to take moderate out-door exercise, avoiding, however, every kind of effort that may tend in the least to increase the action of the heart or excite the system. It may be necessary for the patient to continue some length of time upon a very light and easily digested diet, but not to the extent of producing a predom-

inance of serum over the more vital elements of the blood. When this is carried to a sufficient extent, a more generous diet should be directed, such as milk, rare eggs, etc.

In those cases with an active pulse, where the urgency of the symptoms seems to require immediate relief, ligatures may be applied to the extremities as heretofore directed, and the patient may take twenty to twenty-five drops of tincture of digitalis and tincture of sanguinaria, equal parts, every two hours, until their effect is manifested upon the action of the heart. This may be continued more or less frequently until the general excitement and fullness are reduced.

Any complications that may be found associated with the disease may be treated upon the general principles which I have endeavored to inculcate, and which I have every reason to believe will be found satisfactory.

NERVOUS AFFECTIONS OF THE HEART.

Having already considered the most important, though not all of the *organic* affections of the heart, I come now to discuss for a short time the most common *functional* and *nervous* disorders connected with that organ; remarking, however, that I shall hereafter have occasion to refer to these nervous difficulties when I come to treat of spinal irritation.

It is sometimes no easy matter to distinguish between organic and functional disease of almost any description, and it is particularly the case in affections of the heart. Thus, in the early stage of organic disease of this organ, before extensive structural alteration has taken place, the symptoms are not so clearly defined and satisfactory as they become later in its progress; in fact they present more of the irregular and undefined appearances characteristic of nervous affection, and at this stage it can be only by a general and minute comparison that we can arrive at any satisfactory conclusion. And even then our conclusion must necessarily be somewhat presumptive, subject to confirmation or change as the progress of the case shall determine.

As a general rule the symptoms of nervous and sympathetic diseases of the heart are irregular and evanescent, subject to extremes of aggravation and decline from slight and apparently inadequate causes. Thus when we see an individual suffering, on any sudden mental agitation or from any trivial occasion, severe palpitation of the heart or sudden syncope, which as rapidly sub-

sides or declines when the occasion has passed and the nervous system has become calm and equalized, we may reasonably conclude that this is not a case of organic disease. But when, on the contrary, the case presents unequivocal signs of cardiac disease, continuing more or less severe at all times and under all circumstances, whether the individual is agitated or composed, whether enduring great bodily effort or at rest, whether sleeping or awake, we may without much apprehension of error conclude that the affection is one of an organic character.

The physical phenomena presented in an exploration by auscultation and percussion afford, in *most* cases, presumptive evidence, while in fully developed organic affections they are clear and certain. Though the absence of physical symptoms in the early stage of organic disorders, does not indicate the absence of structural disease, yet the want of physical symptoms indicative of cardiac disorders, in *severe* cases of nervous affections of the heart, clearly determines the character of the disease in such cases. Having heretofore considered the physical symptoms connected with cardiac affections, I shall now take up the subject of

PALPITATION OF THE HEART.

This may consist in a "condition of the heart's movements," in which they may be sensibly and disagreeably felt to an inordinate degree, and are often perceptible at some distance from the patient. To constitute palpitation of the heart, irregularity in its action is not always a necessary attendant, but an increase in the force and frequency of its pulsations beyond the ordinary state, and occurring suddenly, may be considered a fair explanation of what is meant by the term, though irregularity in the contractions of the heart is generally attendant upon the disorder.

The disease is called idiopathic when produced by the increased arterial action which results from slight causes, when the cardiac nerves are in a state of exalted sensibility. It is styled sympathetic when produced by irritation reflected from disease of some other organ. The difficulty may occur in almost any condition of the system when the temperament is highly nervous, but it is far more common in the two extremes of plethora and anæmia. Thus in individuals whose nervous systems are extremely sensitive, and whose blood is in excess and more than ordinarily stimulating, there is a peculiar susceptibility to increased and unnatural movements of the heart which, in time, would be very apt to develop an

irritability of that organ highly favorable to the production of palpitation. The same result may be produced by the opposite condition of the blood, in which the vital elements are deficient, thus necessitating repeated calls upon the heart for the supply of elements, which it can not furnish in proper proportions or quantities to other parts of the system, and yet are indispensably necessary for repair and sustenance. Palpitation of the heart dependent upon organic derangements I have heretofore considered, and now have reference to that which is dependent upon nervous irritability or functional disorder.

Although this affection may occur at any period of life, it no doubt is far more frequently met with at about the age of puberty, especially in females. The differences in its duration, intensity, and frequency of recurrence, render an intelligible description of the affection somewhat difficult and perhaps liable to misapprehension. Attacks of this kind are in fact subject to those extremes of modification generally characteristic of other nervous disorders, and for which we must be prepared to make the allowances usually necessary for the proper appreciation of the real extent of disease in all nervous affections. Thus the case may present the most alarming symptoms, and in a few moments be entirely relieved; or they may continue more or less severe for a number of hours or perhaps days; they may occur at regular and stated periods, or may come on when least expected, at unequal periods, several times in twenty-four hours. The palpitation varies also in degree, from a slightly increased, to the most violent, tumultuous and distressing action, agitating the whole chest, and often showing its impulse by jarring the head and other parts of the system. The pulsations may be irregular, beating one, two or three strokes with great force, and then intermitting; or they may be so rapid that they can scarcely be counted, and so feeble as to be nearly imperceptible; or they may be quick, jerking and irregular, but not interrupted. The sounds peculiar to the heart's action are much increased, being often distinctly heard by patients themselves, especially when lying in a position favorable to the conveyance of its impulses. They can also be sometimes heard by other persons without immediate contact. In violent cases the sounds are of a rushing or whizzing kind, and in some instances the systole and diastole can both be heard. Occasionally the sound produced by valvular disease will be distinctly heard, owing to the force of the heart's contraction; or we may recognize the bellows sound, which usually indicates endocar-

ditis, but may be distinguished in this connection by the absence of other symptoms of inflammatory action. Few diseases are so insidious, and so sudden in their occurrence, as this; being often produced by the receipt of unexpected intelligence, and frequently appearing when there is no apparent cause, while the individual is at rest, and sometimes occurring in the night or after severe fatigue.

Causes.—The most common causes of palpitation of the heart are nervous irritability; anæmia or an exsanguineous condition of the system, produced frequently by repeated venesection in the treatment of other diseases; venereal indulgences; the excessive use of stimulants, such as tea, coffee, tobacco, etc., and also the habit of frequent drugging upon trivial occasions, especially with mercurial preparations. Other predisposing causes which tend directly to produce impaired innervation may be mentioned, such as great anxiety, severe mental labor, and other excesses calculated to depress the vital energies. When the system is predisposed by the influences of these causes, any circumstance calculated to disturb its equanimity, or occasion violent and sudden emotions, will produce this disorder. Thus, sudden emotions of grief, joy, surprise, or fear, may act as exciting causes.

Palpitation of the heart is also a very common symptom in other diseases, such as severe rheumatic gout and neuralgic affections, and protracted cases of indigestion; and is produced in a great measure by the incontrollable nervous irritation generally attendant on such cases. But in many instances it results, no doubt, from irritation located in the great nervous centres, as the unique and extended sympathies often associated with this affection can scarcely be explained in any other way. It results also from reflected irritation located in other organs, such as hepatic disorders and protracted cases of intestinal irritation from worms or any other causes; and it frequently supervenes in protracted fevers, especially in aged persons. An impoverished and anæmic condition of the blood is another cause of the difficulty, which is also apt to be a very troublesome one during the progress of pulmonary affections, being produced, in such cases, by direct sympathy in part, but mainly by embarrassment in the circulation of the lungs, and by the general debility and nervous derangement always connected with pulmonary disease. And, finally, palpitation of the heart is one of the most common symptoms of spinal irritation, and in fact is usually attendant upon many nervous affections wherever located.

Diagnosis.—Very little needs to be added to what has been already

said in regard to the diagnosis of this affection. For the characteristics of organic and functional diseases of the heart I refer to my former remarks. In regard to other distinctions I quote some remarks from Tweedie. "By percussion, auscultation, and inspection of the precordial region, we strive to ascertain whether there exists hypertrophy or dilatation of the heart, obstruction of the orifices, or imperfect action of the valves, or any of the results of pericardial inflammation; of the characteristic signs of each of which we shall afterward speak.

"In nervous palpitations, says Laennec, the sounds of the heart, though clear, are not loud over a great extent, and the impulse, though it appear strong at first, does not sensibly throw up the head of the observer. It was on this latter circumstance, taken in conjunction with the increased frequency of the pulse, that he chiefly relied for their recognition. The extent of the surface over which such palpitations are audible, is, however, sometimes much more considerable than his statement would prepare us to meet with, as they may at times be heard, not only over the whole chest, but even before the head is brought into close connection with it. The shock of the heart, in cases of nervous excitement, has an 'abrupt bounding character,' and does not raise the head with the gradual heave of hypertrophy; and the pulse, though it may not be strong, or though it should even be decidedly small and weak, is again, to use the words of Dr. Hope, ordinarily 'sharp and jerking.' Both this character of pulse, and the bellows murmur which often coexists with it, depend on the spasmodic quickness, and not on the force of the systole.

"In the intervals between the successive attacks of palpitation, when of nervous origin, the action of the heart and arteries is ordinarily natural; and the bellows murmur is of a less permanent character, and often affected by very slight causes, as by a change of posture, taking of food, a passing emotion, etc. Palpitations of this kind, too, are commonly much more distressing to the patient than is the over-action of the heart connected with organic disease, at least in its earlier stages. Of the latter there is sometimes a complete absence of consciousness; while the former, on the contrary, are the source of continual complaint. This internal perception is indeed highly characteristic of nervous palpitation. The different effects of motion and rest on the two kinds of disease are also very conspicuous. Insufficient exercise, especially in combination with too high a scale of diet, when the subject is

plethoric, is sure to exasperate the nervous variety; and it is in the recumbent posture, and during the attempts to procure repose in the earlier part of the night, that the annoyance from them is most marked; and they are least noticed when the individual is actively employed in the open air. In cases of organic affection, on the contrary, the least over-exertion leads to immediate exasperation of the symptoms, distressing dyspnœa, etc., and the over-action of the heart is commonly more prolonged. The most obstinate palpitations met with in practice are those when dilatation coëxists with thinning of the walls of the heart. Laennec mentions such a case, when the palpitations persisted for a week, the pulsations being all the while of enormous frequency.

“By a consideration of coexisting symptoms, as well as of the temperament and time of life, and of the period which has elapsed since the commencement of the disorder, much additional light may be thrown on the nature of the case. When the patient is of a very irritable habit or subject to other affections of a nervous character; when the attacks are accompanied by an abundant flow of pale urine; or, finally where dyspepsia, or any of the other exciting causes above alluded to, have preceded the tendency to palpitation, we shall have reason to hope, at least until fuller investigation has been made, that the disorder of the heart may be only functional. Too much stress is, however, often laid on the presence of dyspeptic symptoms, as if almost diagnostic. It should not be forgotten that derangement of the stomach, and even the temporary distension caused by food or flatulence, may very materially aggravate those palpitations, also, which have their origin in organic disease.

“When palpitations are of the nervous kind, there is occasionally felt a pricking sensation over the precordial region; and on applying the stethoscope, the increased action, unlike to what takes place usually in organic disease, is equally audible on both sides of the heart. Congestions of the chest and head, moreover, are rare; there may, indeed, be uneasy or painful temporary sensations connected with the brain, the senses of sight or hearing; but no evidence of permanent cerebral determination, such as heavy dull pain of head exasperated by stooping, throbbing of the temporal arteries, prominence and redness of the eyes, excessive sleepiness, stupor, and apoplectic tendency; nor is there in most of its varieties, even after their long continuance, with the exceptions to which we have already alluded when speaking of chlorosis and scurvy,

any marked disposition to dropsical effusion. The results of treatment and of attention to diet, air, and exercise, and the careful avoidance of all exciting causes, will tend still further to clear up the nature of the case."

Treatment.—There is perhaps no disease in the treatment of which so wide a range of therapeutic measures is permissible as in palpitation of the heart. In one case a most strict antiphlogistic regimen and hydragogue cathartic are mainly to be relied on; while in another, the very opposite course—a generous diet, moderate tonics and restoratives—can alone be pursued with any prospect of permanent relief; thus illustrating the necessity, in this as in all other diseases, of first investigating and determining the *cause* of the disease. Nor is there any affection in which the distinction between the *palliative* and *radical* modes of treatment more obviously obtains; it being necessary in the same case to apply remedies for the immediate relief of the present paroxysm, and use measures adapted to prevent a recurrence.

The remedies most naturally suggestive of relief in these sudden attacks are the nervine stimulants. The compound tincture of Virginia snake-root, heretofore described, combines properties calculated to fulfill the indications in such cases better than any other compound I have ever used. It is a powerful and diffusible stimulant, and at the same time rarely fails to calm the nervous system and subdue the irritation connected with it. It may be given in drachm doses, and repeated every hour and a half until relief is obtained. It will rarely be necessary to repeat more than once or twice. In the absence of this preparation, the camphorated tincture of opium, or paregoric, may be given in the same way; or Hoffman's anodyne may be used, though, apart from its stimulant properties, it can scarcely be called an anodyne. In some cases I have found the immediately exciting cause to be an overloaded state of the stomach, for which the most prompt relief was afforded by a boneset emetic, or the acetous tincture of sanguinaria and lobelia, given in tablespoonful doses, with boneset decoction.

Cases growing out of the excessive use of tea and coffee, or stimulating drinks, or the narcotic influences of tobacco, or excesses in eating, can be relieved only by regulating those habits, or by abstaining from indulgences which in either case are incompatible with health and the requirements of the system. The indirect depressing influences of any undue excitement, and especially when connected with affections of the heart, are very liable to produce

great morbid sensibility, often resulting in extreme despondency, in many cases amounting to a decided hypochondria, little short of monomania. In such cases, by first gaining the confidence of the patient you will more strongly impress upon his mind the nature of the difficulty, and the consequent necessity of regulating his habits, and thereby increase the probabilities of a cure. It will be of the first importance to guard against all undue excitement, and to conform the habits to the strictest laws of the human economy. If the disease has resulted from the prolonged and excessive use of stimulants, I have always found it the only reliable remedy to cut loose at once, and meet the consequences as they arise. This case may require as a substitute the use of a gentle tonic, and a quieting course of treatment. The wild-cherry bark in decoction may be given in doses of an ounce once in three hours, and gradually diminished in frequency to three times a day. And a few doses of the valerianate of quinia, say one grain at a time, may also be given once in four hours for a few days. Or the lupulin may be administered in the same way, and either will generally answer the indications of the case.

But if the case is one of plethora induced by high living and the *moderate* use of stimulants, the habits should be properly regulated, and free hydragogue cathartics with diuretics should be given until sufficient change in the circulation is accomplished. To fulfill these indications the anti bilious physic and cream of tartar may be given in drachm doses of each, and repeated, if it does not operate, every two hours. This may be taken every second or third day, and gradually lessened in frequency according to the present indications. These measures will be greatly aided by frequent bathing in broke water and whisky, and by moderating the diet.

If the difficulty is connected, as it most generally is, with a weak and exhausted state of the system, and an anæmic condition of the blood, as liberal a diet should be allowed as is compatible with the powers of digestion, and all those measures should be used which experience has shown to be best calculated to repair the circulating fluid, and thus restore the general health. The majority of such cases are unfortunately connected with more or less of gastric irritation, thus rendering strong food and stimulants quite inadmissible. But I have generally commenced by giving beef extract, prepared by boiling beefsteak cut into small pieces and put into an empty bottle, which is placed in a kettle of boiling water for a number of hours. This may be given in extreme cases

in teaspoonful doses every two hours, and gradually increased, and as the patient's stomach improves may be changed for other nutritious articles. Soft cream toast, rice, farina, or rice boiled with chicken, and, if the patient gains, a small portion of rare beef, birds and stale bread, or roast potatoes, may be taken, and milk, if agreeable, may be allowed. Moderate tonics, such as ale and water in small quantities, and chalybeates, such as the tincture of the muriate of iron in soda water, two or three times a day, together with saline baths and moderate friction, are the leading measures to be relied on in such cases.

If the case is connected with neuralgic affections, quinia and iron, and afterward the tincture of colchicum, in sufficient doses to act moderately upon the bowels, may be given two or three times a day. But if connected with spinal irritation, cups may be applied, or the compound tar-plaster may be worn over the tender parts of the spine.

To enumerate all the indications which the various cases of this affection may present, and to consider all the influences that may contribute to its production, would be a tedious and probably an impracticable undertaking. But I will reiterate, what I have so often said, seek first to find the cause or causes of the disease, and constantly bear this in mind in the administration of remedies, and I shall have great confidence in your success.

LECTURE LIV.

LOCAL DISEASES—CONTINUED.

Hepatitis: Preliminary remarks; Two forms—Acute and chronic; Acute form; Symptoms and complications; Course and duration; Anatomical relations; Causes; Tendency of Mercury; Use of stimulants; Prognosis; Treatment.

HEPATITIS, OR INFLAMMATION OF THE LIVER.

There is, perhaps, no subject in the discussion of which the profession has employed more time and learning than in that of *Hepatitis*. The medical periodicals abound with essays, and learned authors have written separate treatises, in illustration of the subject, while all the various systematic works have given it a prominent position. Judging from what we daily read and hear there is scarcely any disease of more common occurrence, and it would be equally difficult to estimate either the amount of ingenuity expended in its discussion, or the quantity of drugs swallowed for its cure. It is also curious to observe the very general proclivity of the self-styled “Regulars” to surmise the existence of some modification of the affection in association with some other form of disease. Some “derangement” or “torpidity of the liver” being suspected or taken for granted, there is at once a convenient excuse for, and a satisfactory offset to objections against, the administration of mercury. I have often been satisfied that physicians assumed—ignorantly or designedly—the existence of this disease, in order to justify mercurial treatment. It seems to be the impression with most of them, that their popularity will be somehow affected, or that people will not appreciate their learning and sagacity, unless torpidity of the liver is detected and announced, and a dose of mercury administered. For almost every body knows that he has a liver, and people have been taught to believe that when it is diseased the only remedy is some mercurial preparation. The philosophy is simple and adapted to ordinary comprehension. The predicate being furnished, the practice easily follows. And thus this disease has been made a

kind of "stool-pigeon" for the decoy of unsophisticated victims who have been thus philosophically persuaded to the deglutition of cart-loads of poison. There is indeed, gentlemen, a lamentable amount of ignorance and error on this subject. Both the profession and the people need to be enlightened, and what little I can do to this end shall be cheerfully done, according to the best of my ability, in this and a following lecture.

Diseases of the liver are divided into *acute* and *chronic*. I do not however apply the term "inflammation" to the chronic form. It is more accurately termed chronic *disease* of the liver.

The *acute* form is characterized by more distinct inflammatory symptoms and is a very common disease, especially in the West and South, though comparatively rare at the North. One reason of this diversity in its prevalence is, that in the West and South the stimulating effects of mercury on the liver are carried to a much greater extent than at the North, and another reason is found in the more serious effects which Southern and Western diseases produce upon the general system and secondarily upon that viscus. This disease has often been found to be the result of mercurial treatment for other diseases, and of course was far more common when mercurial remedies were more universally resorted to. On the contrary we rarely ever see it follow our course of treatment.

Acute hepatitis is sometimes *associated* with the diseases of our Western country, and then results, as I suppose, from the relaxing influence of a long-continued, high range of heat, aided no doubt by indirect malarial influence, upon the biliary organs. It usually commences with a slight chill, followed by a stage of reaction developing all the phenomena of inflammation. There is more or less difficulty of breathing, the respiration is hurried and frequent, especially if the inflammation is confined to the upper part of the liver contiguous to the diaphragm and lungs. When the disease is fully developed, if the lower portion of the organ is involved, the stomach also will be affected, and in some cases nausea and vomiting of bilious matter will occur, which is often a troublesome symptom. In some instances the febrile symptoms precede an attack of hepatitis, and I desire to impress this fact upon your minds. Where hepatitis is the original disease, in nine cases out of ten, in this country, a careful scrutiny will detect the presence of malarial influences. But although it may *sometimes* follow the complete development of the fever, I by no means assert or admit that

hepatitis is the uniform associate of malarial fever. On the contrary, I am convinced that, when this fever is the original disease, hepatitis is rarely associated with or follows it. The distinction is an important one. I will add, however, that if a strong predisposition to liver affection existed, from any cause prior to the malarial fever, the general arterial action attendant upon the fever would be likely to develop hepatitis.

There is more or less *pain* in all cases, the violence of the pain depending on the location of the inflammation. If the upper portion of the liver and its peritoneal membrane is involved, the pain is more severe than when the disease is confined to the under surface. When the whole structure is involved, the pain is of a more dull and aching character. It will vary with the disease, in some cases being troublesome and severe, and then again nearly subsiding. An examination under the short ribs will enable you to detect the character of the disease. The bowels are generally deranged, owing to the disturbance of the biliary secretion, which is the natural purgative provided by nature. If there is just excitement enough to cause an increased flow of bile, a diarrhea will be the consequence, with evacuations of a highly bilious character; but usually the secretion is locked up, in positive inflammation, and constipation is the result. In almost every form of liver affection, whether acute or chronic, the urine presents striking peculiarities, being nearly always high colored, scanty and tinged with bile. This is a diagnostic symptom, and should not be overlooked, for inflammation of the liver is liable to be mistaken for other diseases, such as pleurisy, pneumonia, etc., and a mistake of this sort might lead to an erroneous course of treatment. The pulse is usually frequent and full, though not of that rapid character we find in general peritoneal inflammation. If the peritoneal covering of the liver is more especially involved the pulse is more frequent. Owing to the intimate sympathy between the liver and the lungs and bronchial tubes, a dry hacking cough will usually accompany the disease, especially if the upper portion of the liver is inflamed. When the biliary secretion is not discharged in the form of diarrhea, yellowness of the eyes and of the skin, especially about the neck and breast, will constitute a permanent diagnostic symptom. A peculiar symptom, in all forms of this disease, is the great lowness of spirits with a peculiarly depressed condition of the nervous energies, affecting the moral and intellectual faculties so that the

individual becomes morose and unsociable. This symptom has been universally observed.

I have already spoken of its *association with periodical fevers*, and will only add that a large majority of cases occur under circumstances peculiarly favorable to the development of these fevers, usually in the fall or early part of the spring. You will often find the febrile the paramount symptoms, and when they are removed the inflammatory symptoms will usually subside. There is no disease, perhaps, in which the skin presents a more harsh and husky condition than in affections of the liver. The tongue is usually thickly coated, and the mouth has a disagreeable, bitter taste. If the stomach is involved, the tongue will have a red appearance on the tip and edges, and if there is much congestion of the liver, the tongue will be very dry and husky.

Pain in the right shoulder has been considered a diagnostic symptom, but it is liable to be confounded with rheumatism or neuralgia,—for sometimes *disease* of the liver presents neuralgic symptoms that may be mistaken for *inflammation* of that organ.—But the soreness in the hypocondriac region when hepatitis exists, and the peculiarities of neuralgia, will usually be sufficient to distinguish the disease. This pain is usually felt in the top of the right shoulder and under the shoulder blade, but will appear in the left arm when the left lobe of the liver is inflamed. Anatomy teaches that this otherwise obscure pain is probably caused by irritation reflected from the liver to the cervical nerves through the phrenic nerve, some filaments of which are distributed to the liver. Another diagnostic symptom in ordinary cases is the disposition of patients to lie on the right side. Lying on the left side produces an uneasy tension of the ligaments of the organ, while lying on the right side retains it in its natural position. You will therefore find patients lying on their backs inclined to the right side.

The *course and duration* of this disease depend much on the treatment and constitutional predisposition of the patient, as well as on the season of the year, and many other circumstances.

The disease exhibits, perhaps, a greater variety of *anatomical phenomena*, upon post-mortem examination, than any other. It usually terminates in resolution, especially if properly treated.—Extensive induration and enlargement are very common; softening has been heretofore spoken of as also very common in some forms of fever. Suppuration frequently occurs, and I have no doubt the

course of medication ordinarily pursued is a prolific cause of this termination. Abscess forms sometimes on the external and sometimes on the internal surface of the liver. When it occurs on the external surface, a conical tumor often appears just under the short ribs, or a distinct fluctuating prominence will be observed in the lower intercostal spaces. When fully developed, it may be opened; but you should be careful to wait until the abscess becomes pointed and prominent, in which case the inflammatory action will have caused an adhesion of the tumor to the walls of the abdomen.—The abscess may then be opened with safety. If this precaution is not observed, and the operation is performed before the adhesion has taken place, the pus may be discharged into the cavity of the abdomen, and peritoneal inflammation will be superadded to the existing disease, and be very likely to take the patient off. It may also be discharged in various other directions. Thus the abscess may either communicate with the gall-bladder, and the pus, mixing with the bile, be discharged into the duodenum, or the inflammation may form adhesions between the liver and intestines, and the abscess point into the colon, and thus be discharged in the stools, or it may open *directly* into the duodenum and pass off into the intestinal tube. Adhesions may also be formed, during the inflammatory process, between the diaphragm and the liver, and thus communicate with the lungs, and the matter be thrown up by expectoration. The pus from the liver will be recognized by its dark-brown and greenish appearance, while that which comes from other parts is of a greenish yellow color.

When the inflammation has been confined to the investing membrane, the upper surface of the liver will exhibit greater vascularity than natural, and will appear somewhat swollen and partially covered with exudations of coagulable lymph, often so inspissated and organized as to partially unite with the opposite surfaces of the peritoneal membrane, and sometimes forming permanent and extensive adhesions. When the substance of the liver has been the principal seat of inflammation, its vascular structure will be highly engorged, and may appear, when cut into, somewhat like coagulated blood, dark and friable, and when torn still dark and bloody, but more granulated. In such cases, the whole viscus is usually greatly enlarged, and exhibits a variety of appearances on its surface. You will see at the same time spots of a black, dark-brown, and red color, shading off into a light or pale appearance.

In the advanced stages, and more especially in the chronic form of this disease, induration and enlargement will often be found, though I have seen, in connection with the indurated condition, great diminution in size. In the acute form, a more frequent change will be a softening of structure, in some cases to the extent of producing a pulpy and inorganic mass.

The peculiar structure of the liver renders it liable in the inflamed condition, to the formation of matter, and hence the most common appearances presented in post-mortem investigations are formations of abscesses in the substance of the organ or of ulcers on its surface. Somewhat unlike the formation of pus in the cellular structure of other parts of the body, abscesses in the liver seem to form by a softening of its structure, instead of by secretion, and thus the matter is furnished by the destruction of the parenchymatous substance of the organ. This is especially shown by loss in substance and the simultaneous increase in the amount of matter. Abscesses are sometimes extensive, containing a large amount of matter, while in other instances they are small and numerous. The matter formed in these small abscesses is no doubt occasionally absorbed, as shown by the cicatrices often found when death has occurred from other causes. Gangrene of the liver has no doubt been known to occur, though this is certainly rare.

The *causes* of acute hepatitis are numerous. I have already said that malarial influences may be very potent in its production, though I by no means suppose this effect is produced by the *direct* influence of malarial poison. There is no doubt that long-continued heat, by relaxing the system, predisposes to organic disease, and, upon the occurrence of fever, local determination to the organs most strongly predisposed usually follows. The liver stands in intimate relation to the stomach and bowels, and those organs being more commonly disturbed than others by the various irregularities and excesses of life, and particularly by the use of alcoholic stimulants and crude ingesta, the liver is frequently called upon to sympathize in the disturbances thus produced, and thereby a strong predisposition is established from which, upon any slight cause, such as cold or the occurrence of fever, inflammation is developed. A common exciting cause, therefore, is a change of weather or exposure to cold when the system is relaxed, and, owing to the frequent exposures and changes in this Western country, we are probably more strongly predisposed to this than

to any other disease. It will be remembered, however, that exposure to changes of temperature affects different persons according to their several constitutional conditions and predispositions, so that the same proximate cause will develop in one person disease of the lungs, in another disease of the liver, and in a third derangement of the bowels.

But perhaps the most common source of this disease is the mercurial treatment so generally pursued in times past for the cure of other diseases and especially of bilious fever. I can produce an abundance of evidence upon this point, as you will find by reference to almost any of the authorities. I will quote a paragraph from the liberal and practical work of Dr. Tweedie. Vol. iv, p. 240, he says:

“It is a well established fact, that mercury, administered as a remedy, occasionally causes hepatic disease, which presents itself sometimes under the distinct character of hepatitis, and sometimes under the more obscure garb of jaundice. The first notice of this operation of mercury with which we have met, is contained in a letter by Dr. Sherwen, dated from the Ganges, in September, 1770. Dr. S.’s experience of this action of mercury was confined to a single case. Dr. Dick, who practiced long in Calcutta, states in a letter to Dr. Saunders, that he has often observed chronic liver attacks succeed to long courses of mercury, undergone for the cure of venereal complaints. Dr. Cheyne, in the space of two years, met with three cases of jaundice produced by mercurials; and he had been creditably informed of its appearing in large venereal establishments during the exhibition of mercury. (*Dub. Hosp. Rep.*)—Dr. Nicholl, when serving in India with the 80th regiment, occasionally observed hepatitis come on a few days, but often weeks, after a mercurial course for a venereal complaint; a great proportion of the soldiers who had been treated in this manner for syphilis suffered from inflammation of the liver; and in eight instances the same effect was produced by the exhibition of mercury, administered for the cure of chronic ophthalmia. Dr. Chapman, of Philadelphia, relates cases of a similar description, and ascribes the prevalence of hepatic complaints in his neighborhood to the employment of mercury in the cure of autumnal fevers; he also states, on the authority of some old practitioners, that previously to the introduction of mercurial practice into that district, hepatitis was scarcely known in it.”

Now does any one ask more evidence than this of the *tendency*

of mercury to produce disease of the liver? I am happy to say that this effect is not now so common as when a powerful mercurializing treatment was more customary; but, predicating my opinion upon past experience, I have no hesitation in saying that few cases of chronic disease of the liver occur, except as the result of mercurial treatment. Nor have I any doubt that, where mercury is given to the extent of producing constitutional effect, if patients recover at all, it will be with the attachment of the chronic form of this disease. And this supposition will not appear unreasonable, when you consider the stimulating and irritating effect of mercury upon the glandular system. For when an organ is stimulated beyond its power to endure, chronic disease is very apt to follow.

It is certainly not unphilosophical to suppose that a disease, susceptible of being removed by substituting one of a more severe character, would get well of itself or be thrown off by the unaided efforts of the system. For if this new and more grave substitute can be thus disposed of, why not the original disease? I have no doubt that reflection and future observation will satisfy the profession of the truth of this proposition; and it will be found equally true that, where it is impossible to establish the mercurial influence, the reason is because the existing disease is paramount to any impression which the mercury can produce. A case of that kind should not therefore be abandoned as incurable, for it can be relieved, as a general thing, by a course of modification in consonance with the natural efforts of the system to remove morbid influences.—These views are fully sustained and well illustrated by the past history of the respective modes of treating bilious and other severe forms of malarial fever. We are but just emerging from the delusion which formerly prevailed, and which in fact still prevails with some few of the *older* members of the profession, that severe cases of these forms of disease are curable only by a course of constitutional mercurial medication. The whole profession, and the world at large, are familiar with the fact that cases often occurred in which it was found impossible to induce mercurial action. Such cases were generally considered incurable, and were therefore abandoned; and yet, in spite of the previous enervating treatment, recoveries occasionally happened. And it does seem that such exceptions might have suggested the grave inquiry whether *all* cases would not have done better without mercurial action?—as it is very certain its deleterious consequences would have been avoided, and thus the system have been left in a better condition for the

operation of its recuperative energies. The true answer to that inquiry can not be unknown to any one who has made fair trial of the treatment which I have heretofore recommended, and which has never been known to substitute a worse disease than the original in its place, nor entail upon patients chronic derangements or melancholy deformities.

The *use of stimulants* is a prolific source of disease of the liver. The direct sympathy between the stomach and liver is well known, and post-mortem examinations of inebriates have discovered hepatic diseases in various forms.

Another cause of the very frequent occurrence of acute and other hepatic affections—and one which should never be overlooked—is to be found in the peculiar arrangement of the circulatory vessels of this viscus, which differ in many respects from other secretory organs, and especially in having a much larger amount of blood constantly passing through them. All the venous blood returning from the other chylipoietic viscera, as well as the arterial blood sent directly to the liver, flows through that organ.

Prognosis.—With prompt and appropriate treatment acute hepatitis will rarely terminate unfavorably. But, with inefficient or bad treatment it might in many cases speedily prove fatal. In the progress of the disease, a great degree of restlessness with cold extremities, a rapid pulse and suppression of urine, are ominous of unfavorable results; while a more quiet state of the system, a pulse diminished in frequency, warmth in the extremities and a moisture of the body would be good omens.

We now come to consider the *treatment* of this affection, and I have remarked that few diseases present better well-defined indications. There are, also, few in which the prompt and efficient application of the appropriate remedies is more necessary; and none, perhaps, by which a more favorable opportunity is afforded for an honest test of the measures upon which we rely, and which we offer with entire confidence as complete substitutes for blood-letting and mercury—those heroic measures so generally resorted to by old-school practitioners in the treatment of acute diseases, and especially of inflammation of the liver. I have heretofore sufficiently discussed the subject of blood-letting, and will now proceed to state how this disease may be successfully treated without using either mercury or the lancet.

In ordinary cases of hepatic inflammation, unassociated with miasmatic influence, there is generally palpable derangement of

the stomach, indicated by a thick yellow coat on the tongue. Nothing will more effectually correct this derangement than an emetic, which will at the same time arouse the secretory action of the system, determine to the surface, and thereby equalize the circulation. Nor is the objection to its administration, which you will find in some of the authorities, well founded. I have never seen a case in which any of the symptoms were aggravated by this means, and I therefore unhesitatingly recommend an efficient emetic as the first measure in these cases. It has been my practice to use the acetous tincture of lobelia and sanguinaria, or the vinegar emetic as it is called. It is composed of lobelia and blood-root, with some aromatic, tinctured in vinegar. It should be given in tablespoonful doses every ten or fifteen minutes until full and free vomiting is secured. Its operation will be greatly aided by drinking some diaphoretic tea, as boneset or chamomile. Continue the emetic until it has produced its effect three or four times, according to the circumstances of the case. It acts immediately upon the liver, and bilious matter will usually be freely discharged in the last operations. I have no doubt that this effect is produced chiefly by the blood-root, for if it has any specific action it is upon the liver.

The effects of an emetic being realized, the next indication is to remove by a cathartic any accumulations that may exist in the bowels. It is important in this disease to select a remedy which will be of a decidedly depurative character, and which will not only remove the accumulations of the stomach and bowels, but relieve the system from other embarrassing elements. If podophyllum has not been given in the first instance, with a view to its emeto-cathartic action, it should be administered in combination with the antibilious physic. But if any circumstances, local or otherwise, seem to render the antibilious physic objectionable, you may use, instead of this combination, podophyllin and leptandrin, one grain of the former to two of the latter, repeated every two hours, until free bilious evacuations are procured. This remedy will rarely disappoint you, and there is no means so apt to relieve the liver from inflammation and restore its natural secretions, and thus disengage its vessels.

In some cases there is a tendency to gastro-intestinal irritation, and then it will not answer to continue the cathartic, or at least it should be given in very small doses. Or, if the liver is acting under the influence of the first dose, it will not be necessary to repeat it.

Local applications will generally be useful, and in severe cases indispensable. Sinapisms to the back and abdomen, followed by hot fomentations, will usually be sufficient. They divert the inflammatory action from the inflamed organ, and assist in equalizing the circulation. But in violent and rapid cases, in which you can not rely upon counter-irritation, the application of a number of large cups over the right hypochondriac region, with extensive scarification, will give immediate and more or less perfect relief. You will also gain time to persevere with the other curative remedies. It is true that the direct sympathy between the liver and the adjacent vessels will be such that very little blood can be extracted; yet the revulsive influence of the cups will be exerted upon the inflamed organ, and thereby relieve the local engorgement. This sympathy is apparent in all local inflammatory diseases. By cupping over the abdomen in peritoneal inflammation, over the stomach in gastric inflammation, and in short over any of the inflamed organs, you will be able to get very little blood; while, in the same cases, by cupping remotely from that point, any amount of blood may be drawn. For cupping two or three common-sized tumblers will answer better than the cupping-glasses, from the fact that they cover a much larger surface than the ordinary cups and will thus produce a far greater revulsive influence.

Another measure is highly important in this disease, preparatory to which you should have the patient thoroughly washed in brokewater and whisky, and rubbed off dry with a coarse towel. A free and copious perspiration should be induced, and if possible without opiates, for opium has a specific tendency to lock up the secretion of the liver. This may be accomplished by administering a diaphoretic composed of *blood-root*, *hydrastis*, *sumach berries* and *bayberry bark*, in equal parts. Infuse an ounce of the powder in a pint of water, and give in tablespoonful doses every half-hour. At the same time apply hot fomentations to the seat of the disease, and hot bricks to the extremities. By these means a free perspiration should be kept up for twenty-four hours, or until the inflammatory symptoms are relieved. You will thus remove from the mass of the circulation more stale, effete matter than can possibly be removed by bleeding. Under this quieting, equalizing treatment, the pulse will gradually come down, the skin become natural and soft, the urine less high-colored, and more copious, and in a word, the system will be relieved from all those embarrassments peculiar to the disease.

The circumstances of each case will enable you to judge whether and how far the course of treatment here detailed should be modified. In some cases neither the emetic nor cathartic will be needed; in others the whole course should be repeated; or perhaps the repetition of the cups, fomentations, and perspiration will suffice. In some cases the cholagogue aperients, such as the compound taraxacum pill, so often heretofore mentioned, should be given in smaller doses than usual in other diseases. But if the patient is not essentially relieved, the emetic and cathartic—one or both, as the case may be—should be repeated and followed by the sweat.

In those cases associated with miasmatic influences the first indication, as in other forms of local disease associated with periodical qualities, is to administer the antiperiodic remedies. I hope, gentlemen, you will not think that I have an undue partiality for these remedies, or that I would recommend them with so much confidence had not long experience taught me their superiority to other means. As to their efficacy, I appeal to the testimony of those members of the class who practiced last season, and tested the truth of the doctrines that I have endeavored so earnestly to impress on your minds. If, on being called to a case, you find derangement of the stomach, accumulations present, and an exacerbation of fever, premising an emetic will prepare the way for the appropriate influence of other remedies upon the system. But if called at the proper time for administering the antiperiodics, I would not wait for the action of an emetic, for it is not safe to give the disease time to become fixed, and time is of the utmost importance in these cases. But if called during the stage of reaction, I would not give the antiperiodics until, by the use of the ordinary palliatives, evidences of a remission began to appear. And even if an emetic was needed, I should prefer to wait until the latter stage of the exacerbation before giving it, for if you attempt its administration while the system is excited and the stomach irritated, it will not seem to have the desired effect, and this condition of the patient should be taken into consideration. But you may administer a cholagogue aperient which will produce a mild impression, and in this way gain time. Of course, in addition to this, you should resort to other means of a palliative character. Bathe the surface all over with broke-water and whisky until the febrile symptoms begin to decline. Then come in with the antiperiodic treatment, and persevere with it until the return of the exacerbation.

I have often seen the gravest forms of local disease and inflammation pass away entirely by removing the febrile difficulty.

If, however, the inflammatory symptoms do not yield, the means recommended for simple inflammation of the liver may then be used. If a high grade of febrile action continue, apply cups to the right hypochondriac region, and at the same time produce, if possible, a free and copious perspiration. Such other measures may be used as the symptoms seem to require.

The *diet* in severe cases should be of the most mild and simple character. Rice-water, gruel, black tea, bread-water and the like, only should be allowed. Convalescence will be slow at best, but when the appetite returns will be more rapid.

Mild tonics may be allowed according to circumstances.

LECTURE LV.

CHRONIC HEPATIC DISEASE.

Chronic Disease of the Liver: Symptoms, local and constitutional; Causes; Diagnosis; Prognosis; Anatomy; Treatment; Modified by complications; other morbid conditions noticed. Biliary Calculi—gall stones; Definition; Concretions described; Chemical composition; Various forms according to Vogel; Their development; Effect on the system; Treatment,—1st, Present relief,—2d, Change of diathesis.

CHRONIC HEPATIC DISEASE.

We come now to consider *chronic disease* of the liver. Generally speaking, positive *torpor* of the organ is connected with this form of disease, though sometimes it is accompanied with *excessive secretion* of bile. It is most commonly the sequel of the acute form badly treated. But I have never seen a case supervene upon the course of treatment I have recommended for that form, though I do not say that such will never be the case. Whether it is the result of the acute form, of irregular habits of life, or of mercurial impressions, the patient may not be suspicious of its existence until it is fully fastened upon him. We find it existing in every imaginable grade, from slight *torpor* to total inaction, and from a contracted condition to a slight increase in size, and so on to the greatest conceivable extent of enlargement. I have seen the liver occupy the whole anterior portion of the abdomen, reaching down to the pubes and occupying both iliac regions. It is not, however, often found enlarged to this extent, but is usually somewhat increased. Ordinarily it can not be felt below the short ribs, but if recognized there it will be somewhat enlarged, and will also manifest some tenderness upon pressure.

In connection with these *local* symptoms, we have almost every conceivable variety of *constitutional* disturbances. Among the most prominent is a dry, husky, but not hot skin. I have seen it as rough and scaly as a serpent's, and often very much discolored from the retention of biliary matter in the system. In addition to the yellow or dark appearance of the skin, irregular, circumscribed spots will be developed on the neck and face. The eyes also are

yellow or of a dark dull appearance. The feet are usually cold.—bowels exhibit extreme irregularity, being most generally costive, often obstinately so, and the evacuations are usually deficient in bilious matter. There is generally more or less derangement of the stomach; in fact indigestion may be put down as an attendant symptom of the disease. The appetite is variable, and as the food digests imperfectly there are occasional eructations of gas from the stomach, and also gaseous accumulations in the bowels, sometimes to the extent of producing a tympanitic condition. A particular symptom is a bad taste in the mouth, especially in the morning, and a furred tongue. But sometimes the tongue is perfectly clean, with redness of the tip and edges, and in this case indigestion arises from an irritated condition of the stomach. The urine is also commonly deranged, being of a bright saffron color or darker, sometimes as dark as a strong decoction of coffee, and much diminished in quantity. Another very striking and diagnostic symptom is the peculiar lowness of spirits and gloomy forebodings of the patient. Individuals of naturally buoyant and sprightly dispositions are often changed to gloomy, morose and desponding hypochondriacs. Those before cheerful and amiable, become cross, crabbed and unsociable; in short, undergo an entire change of manner, and apparently of character.

I have, perhaps, already said enough in relation to the *causes* of the disease. It *may* grow out of the miasmatic influences of our country, though mercury is undoubtedly its most prolific source.—It rarely occurs at the North, where malaria is unknown and mercury is more moderately used than at the South and West.

The *diagnostic* symptoms are marked and scarcely need to be repeated. Pain in the side accompanied with a degree of tenderness, and usually a perceptible enlargement, more or less pain in one or the other shoulder and under the shoulder-blade, coldness of the extremities, a harsh, dry skin, and depression of spirits, all indicate more or less disease of the liver, and are so characteristic that few can be misled.

Prognosis.—Under the old system of treatment, when mercury, in some one of its various preparations, was supposed to be the only remedy that ought to be prescribed in chronic diseases of the liver, it became the reproach of the profession—the justice of which was acknowledged even by many of its members—that very few cases were benefited and still fewer permanently cured. Under that sort of medication patients would be temporarily

relieved and then got worse, and so continue alternating between better and worse, until finally a pulmonary disease or hopeless consumption was developed, and the patient hurried to a premature grave. A very respectable old-school physician once said to me that, if he desired to preserve his reputation in the treatment of chronic hepatic affections, he would prefer to be so situated that he could not see his patient oftener than once in two or three weeks. Then, as long as the medicine lasted—and the quantity left could be nicely calculated—the patient would think, under its favorable impression, that he was doing very well. The medicine being used up and its effects passing away, the patient would in a few days become discouraged and again send for the doctor. The same course would be repeated and with similar results, and thus go on until the case became hopeless—the patient and his friends all the time deploring his distance from the doctor, and the doctor having the benefit of the supposition that the result *might* have been different under other circumstances; whereas, if he were so situated that the patient could be seen every day, or oftener if desired, the result would be the same, while no apology could be offered but inability to cure.

But, gentlemen, better things are in store for you, and I hesitate not to affirm—and I would fain challenge a trial—that nineteen cases out of twenty of all chronic affections of the liver *can be cured*—the profession to be judges of the disease and the patients of the cure.

The *anatomical* phenomena are of course as various as the size and condition of the organ in different cases during the progress of the disease. The principal difference between the two forms is, that there are more appearances of inflammatory action in the acute, but more enlargement in the chronic. The opaque effusions and adhesions to other parts, and the injected condition of the vessels, presented in the acute form, may *occasionally* be associated with chronic disease. But in the latter there is greater enlargement, a kind of morbid growth, presenting spots of various colors and appearances, dark and light, with deposits in the structure of the organ of tuberculous formations, and inspissated, coagulable, hardened lymph. Occasionally the size is increased to an incredible extent, from morbid assimilation produced no doubt by long-continued irritation. Induration is found in both conditions—of enlargement and diminution.

We come now to the *treatment*, and in the first place you will do

well to admonish the invalid that *patience* is necessary—that you can not cure him in a short time. The disease is chronic and requires chronic treatment. If the remedies are properly applied a favorable impression will soon be made, and this will secure the confidence of the patient. If the tongue is thickly coated, showing a decidedly deranged state of the stomach, an emetic is of the first importance, not only to prepare the stomach for other remedies, but on account of its effect upon the liver, the circulation, and the secretory functions of the system. It should be repeated once a week or once in two weeks, especially where the stomach continues somewhat deranged. Simultaneous with the emetic a full and free action of the bowels is of equal importance, and during the intervals mild aperients should be resorted to to keep up a gentle action. After thoroughly evacuating the stomach and bowels, you should produce a cholagogue action on the liver by giving the compound taraxacum pill, say in the proportion of ten grains of podophyllin, twenty grains each of leptandrin and sanguinaria, and *quantum suff.* of extract of taraxacum to form twenty pills. Give one pill twice a day, or, if they should act too powerfully, restrict to one a day, in the evening. This remedy tends to act specifically on the organ, and to eliminate from the system that stale matter which is so embarrassing to the healthy functions of the different organs. Persevere with these and the occasional use of more active means. The surface should always be attended to. The patient should be bathed all over every night, followed with brisk friction, until a glowing reaction on the surface is secured. If he is not too much debilitated, a cold shower-bath every morning will be very beneficial in giving tone and energy to the whole system. If you find that the liver is decidedly inflamed, the application of cups, followed by the irritating plaster, will produce good results. In those cases of enormous chronic enlargement, to which I have referred, I have realized excellent effects from a caustic issue in the side. This should, if necessary, be continued for months. But usually the cups and irritating plaster will be sufficient.

As a modification of treatment in cases where indigestion is a prominent symptom, and where there is not arterial excitement the compound tincture of tamarac is a valuable remedy. A small portion of podophyllum should be added to the preparation as described in the American Eclectic Dispensatory, and by this remedy you will fulfill all the indications of the disease. The podophyllum

acts on the biliary secretions, and the aloes contained in the bitters acts on the lower portion of the bowels, while at the same time you have excellent tonic properties to arouse the digestive functions. It is also diaphoretic, determining to the surface, and an excellent diuretic, eliminating a great amount of effete matter from the circulation through the medium of the kidneys. In cases of indigestion I can not fail to recommend this preparation with particular emphasis. If, however, the bitters can not be borne, a very excellent tonic will be found in a decoction of wild-cherry and ptelea barks, three parts of the former to one of the latter, taken in fluid-ounce doses three times a day. This prescription will be found particularly applicable after the derangement of the stomach has been corrected by the evacnants. When profuse biliary secretions and consequent diarrhea exist, you may give small doses of the compound powder of ipecac. and opium, or a weak solution of morphia—say one twelfth to one-eighth of a grain—at night. The morphia by checking the action of the liver fulfills an important indication. When the local disease is associated with a general contaminated state of the blood, and especially if secondary syphilis is found to exist, as it often is, the compound sirup of stillingia, or the common alterative sirup as prepared in the Eclectic Dispensatory, should be freely given instead of the bitters; not however omitting the pill. Whatever may be the complications, these various remedies should be repeated and persevered with for a long time, changing from one to the other as the symptoms present appear to indicate.

There are various *other affections* or *morbid* conditions of the liver not specially comprehended under the term “chronic disease.” Or at least I have not particularly referred to them in speaking of that affection. But as they are manifested by few if any symptoms developed during life, but are known mainly from appearances discovered after death, they are not of much practical importance, and I shall only refer to them briefly in this connection. Our incidental discussion of the conditions known as hypertrophy, atrophy, induration and softening, as associated with acute and chronic hepatitis and the various forms of fever, is perhaps equal to our present knowledge of the subjects, and is at least sufficient for all practical purposes. So limited is the practical benefit resulting from the distinctive consideration of those affections known by the terms cirrhosis or granular degeneration of the liver, fatty liver, tubercles and hydatids, that I am quite certain I should be wasting

the time which would be occupied in discussing separately or otherwise those varied morbid degenerations. I am therefore constrained to omit any further notice of them, and I am the more satisfied with this course, from the conviction that the measures, recommended for the treatment of the various other diseases of this viscus, would be likely to fulfill all the indications which might be recognized in the progress of the morbid modifications referred to. So also what has been said on the functional disturbances of this organ as associated with fevers, diarrheas and dysentery, and especially the incidental consideration of its functional disorders, in discussing the subject of jaundice, will comprehend all, as I conceive, that can be profitably said on this branch of medical science.

I have not, however, treated in a practical way the subject of biliary calculi, and, as there are some practical points connected with the subject, I will detain you for a short time in the consideration of

BILIARY CALCULI, OR GALL STONES.

These terms are applied to concretions precipitated from bile.—They may be found in any part of the biliary apparatus, as the gall bladder, the cystic duct, the ductus communis choledochus, the hepatic duct, and the bile tubes or *tubuli biliferi*; and are sometimes precipitated from the bile after it has passed into the bowels. They are most frequently found in the gall-bladder.

These concretions exhibit great difference both in their physical properties and their chemical composition. In their physical form they vary from the size of small grains—visible only by the microscope—to that of a mass large enough to obstruct the bowels by filling the cavity. Dr. Wood says he “has seen them fill the cavity of the bowels and molded exactly into its shape.” It is said a number of them sometimes become agglutinated and thus form into a “large mass in the bowels and produce ileus by obstructing the passage.” They differ considerably in color, but more in size. They are generally of a yellowish-brown color, and of a moderately soft consistence; varying in shape, but generally irregular, with angles more or less obtuse. There is another kind, of different chemical proportions, composed of crystalized carbonate of lime, having pointed and rough edges, and producing exquisite suffering in their passage from the gall-bladder to the bowels. These are of much lighter color and greater specific gravity, and of more rare occurrence than others. The former present more the appearance of the mulberry urinary calculi. In some cases the concretion

seems to be little more than inspissated bile, having, when occurring singly, a rounded shape, but, when a number of them are pressed together, assuming a many-sided form dependent somewhat on the number thus pressed together. Inspissated bile and mucus, colored by the bile pigment, often form the nucleus around which the more common elements of these concretions collect.

The chemical composition of hepatic concretions differs in many instances, depending, of course, on the character of the formations. They are generally made up of the following constituents, viz:

1. Cholesterin, arranged in layers of rhombic or irregular shape, and easily separated by heated alcohol.

2. Bile pigment, having a light or brownish red, and in some instances a dark-brown color.

3. Choleic acid and choleate of soda—principles that are found in the bile.

4. Mucus.

5. Earthy salts, especially carbonate of lime.

6. Margaric and its compounds.

These are the principal constituents of gall-stones, though it should be remarked that they are seldom all found in the composition of one stone. Cholesterin is the leading substance usually found. According to the arrangement of Vogel the following are the principal *forms* of biliary concretions: (*Vogel*, p. 337.)

- “1. Fine precipitate of bile pigment and crystallized cholesterin, imbedded in mucus, mixed with epithelium whose cells are sometimes incrustated.

- “2. Biliary gravel—minute concretions of the size of a hempseed or grain of sand; occasionally many such concretions are united by mucus so as to form a large mulberry-shaped calculus.

- “3. Soft biliary concretions, which in a recent state readily admit of being molded between the fingers, consisting of crystalline deposits of cholesterin, between which there is bile pigment.

- “4. Crystalline calculi consisting for the most part of cholesterin, nearly colorless, transparent, with a crystalline, fibrous fracture, granular on the surface, and usually covered with minute crystals of cholesterin.

- “5. Dark calculi of a reddish-brown color, and earthy fracture which does not become bright by friction. These consist for the most part of bile pigment.

“There is a variety of this species, which is of a dark-brown almost black color, and exhibits a red, mulberry-like appearance.

These calculi seem to consist of a peculiar modification of bile pigment.

"6. Calculi consisting for the most part of carbonate of lime; they are crystalline, with rough surfaces terminating in sharp angles of a clear or sometimes rather brown color.

"7. Gall-stones of whitish color, saponaceous feeling, and concentric laminated arrangement, which on scraping assume a polished appearance, and consist for the most part of cholesterin.

"8. Gall-stones consisting of alternate white layers of cholesterin and dark yellow layers of bile pigment.

"The two last kinds are by far the most common."

It might be interesting to investigate how these biliary concretions are *developed*. Without, however, entering into a minute consideration of this subject, I will remark that their formation is no doubt dependent upon the same principle which governs other concretions; that a nucleus is first necessary, and then a gradual accumulation takes place upon its surface. The nucleus is started by chemical changes in the biliary secretions, resulting in a precipitate, which, not being discharged with the bile, forms into a mass, and gathers accretions from the same condition of the bile. It is supposed that to form this precipitate the bile must be somewhat inspissated by being retained longer than is usual, and then, by a process of exosmosis, the more fluid portions are disposed of, and chemical changes promoted. Thus the precipitate is formed, the nucleus made, and the different concretions go on, until they are discharged. I will not however follow the subject further, but simply refer you to the different treatises on morbid anatomy.

Our special object at this time is to learn the *effect produced upon the animal economy* by these morbid accretions, and the best mode of affording relief. It has already been said that when these substances pass the gall-duct, if their size is large, or if they are jagged in their formation, they produce severe suffering. This is done of course by putting the coats of the duct on the stretch, or by the sharp points, if of that kind, penetrating its structure, and in either case bringing on a spasm of the duct which is exceedingly painful. You would readily infer that the spasm comes on suddenly, as the substance is formed in the gall-bladder and, by some favorable circumstance, is suddenly forced into the duct. The accompanying pain usually occurs in paroxysms, though more or less uneasiness is constantly experienced. It is of course situated in the right hypochondriac region and shoots back to the spine. When that

condition of the system, favorable to these formations, has existed for any great length of time, the patient will exhibit a pale, sallow complexion, a small, feeble but not excited pulse, and will often suffer from nausea and vomiting, great restlessness and hurried respiration. The concretion at length makes its way through the duct into the bowels and passes off with the stool. The disturbance created by the passage of these concretions through the duct often results in inflammatory action, peritoneal adhesion and ulceration, which progresses until an opening is produced through which the concretion is discharged externally or into the abdomen; or it may produce more or less obstruction to the flow of bilious secretions, though the obstruction is rarely so complete but that a portion of the secretion will find its way into the intestines.

In the *treatment* of these accidental obstructions, two important and well-defined indications present themselves; *first*, to relieve the spasmodic action of the duct, and thereby induce relaxation and allow the concretion to pass away; and *secondly*, to change that diathesis of the system which appears favorable to the formation of the concretions. The first indication will generally be effectually fulfilled by giving full doses—say two drachms—of the compound tincture of serpentaria repeated every hour and a half if relief is not immediately obtained. The application of a sinapism extending over the stomach and liver, followed with hot hop fomentations, or if inflammatory action has been developed, the application of a few cups with scarification, followed as usual with hot fomentations, will be likely to afford relief. It will be important also to administer a cathartic, and one that will produce its action speedily and freely. For this purpose, if the stomach will tolerate it, as it usually will, the common antibilious physic with cream of tartar will answer a better purpose than any remedy of the kind I have ever given. If, however, the stomach is irritable and medicine is retained with great difficulty, small doses—say a teaspoonful at a time—of a decoction of the compound neutralizing physic should be given, and repeated every hour till the stomach is quieted, and then it may be given in larger doses till it operates on the bowels. If derangement of the stomach exists, as indicated by a furred tongue, a free emetic will be a very necessary part of the treatment. The infusion of lobelia and boneset, administered until full and free emesis is procured, will not only give relief by removing morbid accumulations in the stomach, but the powerfully

relaxing influence of lobelia upon the whole system, and consequently upon the spasm of the duct, affords an additional reason for the administration of the emetic, and especially this particular kind.

[Give tincture of gelseminum, thirty drops every half-hour, until its effects are manifested by inability to control the eye-lids. I have known this to give relief in very severe cases. I have also used with success dioscorein in doses of four grains every half-hour. S.]

The *diathesis of system* favorable, and in fact believed to be generally indispensable, to the formation of gall-stones, is a predominance of acids, associated generally with irritability of the nervous system. To obviate this difficulty, I know of no remedy more efficient and reliable, and none that may be given for a longer time without detriment to the digestive organs, than the compound neutralizing cordial, with the addition of an equal part of wild-cherry bark. Combining as this preparation does, a mild but efficient and valuable alkali with good tonic and aperient properties, few remedies will be more readily taken, and none will be more generally borne. The following formula may be employed :

℞. Rad. Rhei.,
Fol. Menthæ pip.,
Cinnamomum,
Bicarb. potass.,
Prunus Virg., aa ʒss. Pulv. M.

Decoct in water one qt., strain, and add brandy half a gill.

This should be given in stemglassful doses three times a day; but more or less as may be necessary to produce its aperient effects on the bowels. In nearly all chronic affections the skin will be found performing its functions imperfectly. It is therefore important in all such cases not to overlook those appliances calculated to excite healthy action in this great emunctory. The cold shower or sponge bath in the morning, followed as usual with friction, or if this is not convenient or can not be borne, the warm alkali and whisky bath at night should never be neglected. Exercise in the open air to the extent the system can bear should always be prescribed. The diet should be liberal but not extravagant, avoiding greasy and high-seasoned food, and those articles which readily enter into fermentation, such as succulent vegetables, pastries, hot bread, and the like.

[I have found the nitro-muriatic acid a valuable agent in this affection.

℞. Nitric acid, fʒss.
Muriatic acid, fʒj.
Distilled water, fʒij. M.

Sig. Take a teaspoonful in half a wineglassful of water three times a day.

The bowels should be kept regular by the following pill :

℞. Leptandrin,
Ext. taraxacum, āā ʒj.
M. F. pil. No. X.

Sig. Take one or two morning and evening.

Where there is no torpidity of the bowels and the biliary secretion is sufficiently abundant, the following treatment may prove sufficient :

℞. Bicarb. Soda, ʒj.
Divide into thirty-two powders.

Sig. One to be taken dissolved in a gill of water, three times a day.

The patient should avoid all kinds of fat, and use but a moderate amount of animal food. To relieve any uneasy or painful sensations in the abdomen a pill of hyoscyamus should be taken occasionally. S.]

LECTURE LVI.

LOCAL DISEASES—CONTINUED.

Jaundice: Symptoms described generally; Bile pigment in healthy blood; Characteristic symptoms of Jaundice; Constitutional disturbance; Course variable; Post-mortem; Causes; Treatment,—Leading indications; Jaundice in young children.

JAUNDICE.

I propose to devote the present lecture to the consideration of *Jaundice*, a disease which stands in intimate relation with those we have recently been discussing, since it is usually connected with more or less derangement of the liver.

We frequently find the *symptoms* of jaundice associated with organic disease of the liver, or in connection with disturbance of its functions. Having no generic character, it will be recognized chiefly by a congeries of symptoms. You will detect it by the appearance of the eyes, the skin, and generally, though not always, by the character of the stools. It is a well determined scientific truth that the coloring matter of bile is also a constituent element of the blood. It follows therefore that the general symptoms of jaundice may exist without any special derangement of the functions of the liver; and cases are occasionally met with in which the liver performs its functions with ordinary activity, as indicated by the character of the stools, while the appearance of the eyes, skin and urine all incontestably point to an excess of coloring matter in the blood. But the disease is generally owing to inactivity in the functions of the liver. The elements that are ordinarily thrown off by that organ are returned in the circulation, though in their elementary condition, and manifest themselves—especially the bile pigment—in the color of the eyes, skin, etc. It is clear therefore that bile does not exist ready-made in the blood, but is formed by some process in the liver.

The philosophy of the formation of bile involves the whole subject of secretion, and is full of interest to the student. Whether it is formed by an elective vital process, or by percolation through

the tissues of the liver, or by a chemico-vital operation, are indeed interesting questions, but not as yet satisfactorily answered. The bile is a complex fluid, made up of a great number of proximate principles, which are found by analysis to be mainly combinations of carbon and hydrogen, in different proportions. Careful analysis by Liebig shows that sugar and butter are made up of the same elementary materials, and that in precisely the same combining proportions, the particular arrangement only making the difference in their qualities. So we have a number of these proximate principles composing the bile.

But however the question may be answered, it is certain that the *bile pigment exists separately in the healthy blood*, though in quantities so small as not to be perceived by ordinary inspection. It is also certain that it exists in the blood in excess, in cases of jaundice, as manifested by the color of the eyes, skin, etc. The characteristic symptoms of jaundice will be found, either when there is undue formation of coloring matter, or when there is want of a proper secretory action in the liver. In the latter case the symptoms will be indicated by the absence of the characteristic yellow tinge of the alvine evacuations. In the former case the evacuations will be yellow as well as the eyes and skin, showing that there is no torpidity of the liver, but rather an excessive formation of bile pigment. This is illustrated by the stools of some children for the first few days after their birth, which all practitioners must occasionally have noticed. I have also witnessed the same phenomena in certain forms of fever where the discharges showed a copious bilious secretion, while the skin and eyes exhibited the yellow pigment to a great degree. The accumulation of bile pigment is most usually dependent on torpidity of the liver, in which case it is not secreted, but is retained in the system, to seek other channels through which to be eliminated. Hence we find it deposited in the skin under the cuticle, in the urine and often throughout the cellular structure of the whole system, even in the bones and other solid structures.

There is another doctrine that has obtained, and may have some truth in it. It is, that this formation is dependent, not so much on torpor of the liver, as on the *inability of the outlets* of this organ to discharge it, and therefore, that the bile is secreted and subsequently absorbed into the circulation. It is contended that while the pigment existed free in the blood, and not combined as in the secretion, it could not exhibit the symptoms that are observed. Now this would be a plausible theory, had it not been shown that

coloring matter, in a free state, exists in the blood. But since that has been satisfactorily determined, we are forced to the conclusion that, at least in most instances, this matter is not secreted by the liver, but is retained in the circulation on account of torpidity of that organ. There is another weighty objection to that doctrine. Secreting surfaces rarely perform the function of absorption. There is a certain set of vessels specially appropriated to the function of secretion in which absorbents do not exist. This is generally the case, and affords in the main a very conclusive argument. But we know that organs sometimes take on a vicarious action, and perform the office of others that become impaired or decayed. And it is not impossible to suppose that the vessels which secrete the bile may take on this vicarious action for the purpose of relieving the distended reservoirs of bile, when the usual outlets are obstructed. This, however, will only be the case to a small extent, and not sufficient to afford the necessary relief. And it further seems to be specially contradicted by the fact that when the liver is stimulated to action, the symptoms are relieved, while, if the bile had been retained in the gall-bladder, it would of necessity exhibit a far more vitiated character. [There is no room for doubt that bile is largely reabsorbed from the hepatic ducts and gall-bladder, when the common bile duct is obstructed from any cause. The liver is well supplied with absorbent vessels, and as these, like the lymphatics throughout the body, terminate in the venous system, there is no difficulty in accounting for the color of the skin, urine, etc., in such cases. It is quite evident, also, that reabsorbed bile is much less deleterious than the constituents of that fluid are when allowed to accumulate in the blood-vessels, uncombined by the action of the liver. S.]

The *functions* of the liver may be disturbed for a time *without developing jaundice*. This we frequently see in some cases of fever. But it is supposed that, in such cases, either the elements of which bile is composed are not furnished in the usual quantities, or else they are carried off by the vicarious action of other organs, and the symptoms tend to show this to be the case. Jaundice, however, is often an attendant on other diseases which cause a deficiency in the secretion. Thus we frequently find it in connection with gastro-intestinal irritation. It may depend entirely on duodenal inflammation, and is one of the most common effects of that local difficulty. It is also frequently connected with mere torpor or atony of the organs concerned in digestion, and all

that is required to remove it is to stimulate those organs into full activity.

The *symptoms* that make up what is called jaundice can scarcely be mistaken. *Yellowness* is the predominant peculiarity. The color of the skin varies from a slight yellow to a dark brown. Whether the difference in color arises from the quality of the bile, or the quantity in the capillary vessels and areolar tissue, is a question of some interest. I suppose it is owing more especially to the amount. We see the same individual exhibiting a striking difference in his appearance at different stages of the disorder. At first the eyes may be decidedly yellow, and as the disease progresses and the elements accumulate, both skin and eyes become very dark, and in some instances a partially green tinge is given to the skin. I have also seen persons of a dark skin and bilious temperament turn almost as dark as a mulatto. These cases have been called the *green* or *black jaundice*. The *urine* exhibits the same variation in color, and in this we can better demonstrate the cause of that variation. At first the urine is of a bright saffron color, but, as the bile pigment accumulates, in the progress of the disease, it resembles in color a strong decoction of coffee. In that state, by dilution in water, it gradually assumes the bright saffron hue of the early stage. This is decisive proof that the variation in color depends on the quantity of coloring matter in the system. The *stools* are usually deficient in bilious matter, as shown by their resemblance in color to ashes or clay. In children they are more apt to be of a clay color, but in adults they are mostly gray or ash-colored. In rare and exceptional cases they are decidedly brown. Another striking peculiarity of the evacuations from the bowels is the great amount or size of them, in some instances quadrupling the ordinary quantity. I do not recollect to have noticed any mention of this symptom in the books, but I have uniformly observed its existence in all the cases I have seen, and it is owing to the fact that the food is not changed by the bile and there is consequently no absorption of it.

There is little *constitutional disturbance* in this disease. Fever is rarely present, unless jaundice is associated with some form of inflammation. The skin is husky, dry, and harsh to the feel, though not hot. The stomach sympathizes with the condition of the liver, insomuch that the healthy action of the one depends upon the other. One can not be involved without affecting the other. In inflammation of the liver the stomach becomes irrita-

ble, and in torpor of the former the latter also becomes torpid, and indigestion is the consequence. Whether indigestion depends on atony or on irritation matters but little; we usually find one of these present. In cases of more positive irritation we often find nausea and vomiting, and then the symptoms of constitutional disturbance are more evident. The liver will be inflamed and so enlarged as to be felt by the hand under the short ribs. The tongue is usually furred, and a bad taste in the mouth is a striking symptom. Constipation is a common attendant; the biliary secretion, which is the natural purgative of the bowels, and brings into action the muscular coat of the alimentary canal, being locked up, torpor of the bowels naturally follows. There is another symptom, the existence of which some of the authorities seem to question, but which I think might naturally be expected in some cases, and can be accounted for on philosophical principles. I allude to the yellowish tinge which patients complain of seeing on all external objects. Now every one knows that colored glasses worn over the eyes will give every thing the same hue, and this symptom is produced in the same way. The external membrane of the eye becomes charged with the yellow coloring matter of the bile, and this produces the same effect that yellow glasses would. All the secretions are sometimes tinged more or less with the coloring matter of the bile, and it is probable that its other proximate principles would be discovered equally present in a free state in the secretions. The perspiration will frequently exhibit this change by the color imparted to the clothes next to the body, or by rubbing the skin with a moist towel. Jaundice may be associated with common bilious fever, and in this case gastro-intestinal irritation is usually present, but will generally subside when the fever is arrested.

The *course* of this affection varies in its natural progress, and is greatly influenced by the treatment. In some instances it appears suddenly, continues for a short time, and then disappears. Again, it comes on very gradually, making its approaches with few unequivocal symptoms, until the skin and eyes unmistakably indicate its presence. Slight changes in the general appearance and modifications of the general symptoms may be observed in the course of the disease, but the most unequivocal evidence of a *favorable* change will be the change of the color of the alvine discharges to a partial or complete yellow tinge, and of the urine and skin from a dark or yellow appearance to a more light and natural state.

An itching of the surface often associated with slight anomalous eruptions will frequently be observed, and are favorable indications. Jaundice rarely proves fatal, and I have never, in my own practice, seen a single fatal case. When it does prove fatal, it would no doubt be found associated with symptoms of organic affections of the liver, though it might be connected with disease of the brain. The excessive accumulation of the morbid elements of the bile, when retained in the circulation, would readily produce effects upon the brain not unlike those resulting from a highly carbonaceous condition of the blood. And indeed you will remember that carbon is a predominating element of bile.

A disease proving so rarely fatal can not, of course, be expected to afford many opportunities for *post-mortem examinations*. Almost every condition of the liver has been detected in the cases that have been examined, but not growing exclusively out of the character of jaundice, nor necessarily connected with it. The proper anatomical phenomena will be found to be the color imparted to both the solid and fluid portions of the system. The brain is said to be more rarely affected in this way than other substances of the body, while the adipose structure exhibits it most sensibly.

Jaundice may be *caused* by any thing that will bring about inactivity of the liver, and hence we find it often produced suddenly. It may result from sudden fright, and often no doubt comes from great mental anxiety. One writer mentions a student whose anxiety to pass the ordeal of a final examination was so great that a positive case of jaundice grew out of it. The "green-eyed jealousy," of the poet illustrates the same effect. Generally, however, the disease comes on gradually, and may be produced by any influence which operates directly or sympathetically upon the liver, and causes inactivity in its secretory functions. It often follows long continued and excessive action of that organ. Hence the use of mercury is one of the most common causes of this disorder. I have a number of cases that I could refer to this cause in some form or other.

Treatment.—There is not among the old-school practitioners that uniformity of sentiment in regard to the use of mercury in this affection which prevails in respect to other diseases. While we find among many of the best authorities the use of that remedy denounced and reprobated, there are others who speak of it as the *sine qua non* in jaundice, and while some practitioners attribute their failure to cure to the obstinacy of the disease, others are

willing to ascribe their ill-success to the irritating effects of the remedy. I have rarely found any difficulty in speedily arresting the disease by other remedies, a fact the statement of which drew forth an expression of surprise and skepticism from an old-school physician. But when he came to see the success of those remedies in actual practice, he had the candor to acknowledge their vast superiority to calomel. I can easily conceive when mercury might be taken with benefit, and I am not disposed to deny that it does act on the liver, and excite the glandular system, as shown by its influence on the secretions of those organs. But it does not follow that other remedies may not have an equally good and even better effect, and at the same time be safer and more reliable.

The two *leading indications* in the treatment of jaundice are presented in the condition of the organs involved, and the cause of the disease. If you do not first look to these you will be working in the dark, and in all probability will do your patient more harm than good. When there is torpor of the liver and no evidence of irritation of the stomach, a free operation of podophyllum is the first indication, which will be fulfilled by giving it in doses of from ten to fifteen grains. If its emeto-cathartic action is not obtained in three or four hours it should be repeated with the addition of four grains of ipecacuanha, or as a substitute you may give two grains of podophyllin and four of ipecacuanha, which should be repeated in three or four hours if necessary. This will usually be all the active treatment which the case will require. But if the case should prove more obstinate than ordinary, it may be advisable to repeat the same active measures in a week or so. And for the purpose of keeping up a mild action of the liver and bowels, a pill composed of podophyllin, leptandrin, and extract of taraxacum, may be given every night and morning. I have also usually administered at the same time tablespoonful doses, two or three times a day, of a decoction of wild-cherry bark and sanguinaria, which, in cases connected with debility of the stomach, will rarely fail to produce highly beneficial effects, and should be continued for some time after the healthy secretion of the liver has been restored. Its action upon the biliary secretion obviates the necessity for constantly resorting to cathartics, and it should never be neglected except in those cases presenting evidence of gastric irritation, when the blood-root should be omitted and the cherry-bark be given alone. Attention to the skin is of the utmost importance. Frequent and thorough bathing not only induces a

genial equilibrium in the circulation, but excites a natural and free perspiration, and thus overcomes that obstinate torpor of the skin which exists in jaundice. Let the patient, before going to bed, be bathed over the whole surface in a solution of bicarbonate of potassa and whisky, followed by brisk friction with a coarse towel.

But when the disease is connected with irritation of the stomach and duodenum, as indicated by a high-colored tongue, frequency of the pulse, and tenderness upon pressure, it will not answer to pursue the *active* course of treatment which I have prescribed. In such cases your main reliance will be attention to the skin, abstinence from indigestible food, and a free use of a decoction of taraxacum and ptelea. The latter operates in giving tone to the stomach and allaying irritation. If the tenderness is extreme, much benefit will be derived from counter-irritation, sinapisms, fomentations, etc. If the disease is dependent upon local irritation, when that is removed the liver, beginning again to form its healthy functions, will pour out its bile into the alimentary canal, and perhaps, owing to the stimulating, purgative effects of the bile, a slight diarrhea may follow. But this should not be interfered with, unless it runs to great excess. If the disease is connected with inflammation of the liver, the remedies that were recommended for the treatment of that disease should be administered. If it is connected with mere torpor of the liver and inactivity of the digestive organs without irritation of the stomach and bowels, after having effectively rallied the organs involved by the emeto-cathartic action of the podophyllum, or if that thorough measure is not advisable, by the cholagogue pill, you may follow with the comp. tinc. of tamarac, adding to it a small portion of podophyllum, and giving sufficient doses to secure one or two evacuations daily; or, if preferred, the podophyllum may be omitted, and the patient may take one of the pills every night. You can administer this course with the confident assurance of giving relief.

That form of jaundice that occurs in *young children* usually passes off very soon. It is only necessary to clear the bowels of the meconium. This can be accomplished with any mild purgative, such as sweet oil.

There are various other remedies recommended for this affection both in the books and in domestic practice, which I have not deemed necessary to notice particularly; chiefly because I have thus far had the good fortune to have met with no case that has not promptly yielded to the course of medication I have just

described. I will, however, remark that many of the old-school members of the profession hold the nitro-muriatic acid in higher estimation than any other remedy for jaundice not even excepting mercury. It is used externally and internally in appropriate doses. The nitric acid alone, used in the same way, has been highly recommended by many European practitioners, and especially by Sir James McGrigor in his medical sketches in India. In domestic practice, a decoction of the barberry (*berberis canadensis*) has a high reputation in some sections of the country. Horse-radish is also often used, but with what success I am not prepared to say.

The *diet*, in cases unconnected with gastro-intestinal irritation or inflammatory action of the liver, should be plain but nutritious, such as a small amount of animal food, good bread, potatoes and the like. But in cases connected with irritation, only the most simple, mild, and farinaceous food should be allowed. Active exercise should be taken when there is not much excitement from fever, but when there is fever and irritation the patient should keep quiet.

[I have treated many cases of jaundice and always successfully. I have never however employed the emeto-cathartic treatment advised by Prof. J. All the cases that have come under my observation, presented unequivocal evidence of obstruction to the evacuation, rather than of failure in the secretion of bile, and were attended with marked duodenal irritation. I have chiefly relied upon the aperient action of taraxacum; and the soothing tonic and diaphoretic influence of an infusion of wild-cherry bark, peach-tree leaves or bark, and either marsh-mallows or Solomon's seal; bathing, exercise, and proper diet.

S.]

LECTURE LVII.

LOCAL DISEASES—CONTINUED.

Mercury: Reference to past; Reasons for discarding Mercury; Has done more harm than good; Respectable professional opinions quoted; Dr. Dixon; Its use in hepatic and venereal affections; Quotations from Dr. I. Hays; Quotations from M. Desruelles.

MERCURY.

[Although this and the succeeding lecture appear to be out of place under the title of Local Diseases, there appears to be no other part of the work to which they can be properly transferred. I have therefore concluded to retain them in the place which they occupied in the first edition. And as Prof. Jones appeared to desire that his views on Mercury should be retained without alteration in the new edition, I have as far as practicable avoided altering the original.—S.]

Until within a comparatively recent period, as you very well know, the belief was almost universal that mercury, in some of its preparations, was absolutely necessary in the treatment of hepatic affections. Whether the disease of the liver was organic or functional, it was equally considered an indispensable specific. This belief, which widely obtains even at the present day, requires of me, before leaving the subject of hepatic affections, a more detailed exposition than I have hitherto given of my reasons for discarding that article as a remedy for these affections, as well as for other diseases. It is also due to the reputation of the Eclectic school, and will, perhaps, be expected by community at large, or at least by those who take an interest in the rival claims of the different systems of medical practice, that we should not only give a full and explicit exposition of our reasons for repudiating mercurial preparations, but also indicate satisfactory substitutes, which will fulfill the same indications for which mercury is generally prescribed, and which we claim to be scientific remedies, standing the test of experience and challenging the approval of the soundest judgment.

Philosophy and common-sense equally require that, when an ancient and time-honored usage is attacked, not only should its inconveniences and abuses be pointed out, and the grounds for its

abandonment be set forth, but also that a better and safer practice should be indicated. I readily assent to the truth of this remark, and am prepared to comply with its demands. In regard, however, to the matter of furnishing substitutes which are even more efficient and reliable than mercury, I think enough has already been said on this subject, on several occasions, in the course of these lectures. And it therefore only remains for me, on the present occasion, to address myself to the first demand alluded to. There are two modes of answering the question, "Why do we discard mercury?" One is, if I may so speak, by *philosophy*; the other, by *authority*. The first requires an exposition of the chemical changes and uncertain combinations of mercury in the system, and its powerful, dangerous, and injurious effects upon the constitution. The other requires the production of the opinions of those whose scientific attainments, long experience, and accurate observation, entitle them to challenge the highest confidence of the *whole* medical profession. I shall do both. But as the reiteration of our theory and the results of the experience of members of the Eclectic school may be received with doubt and hesitation, I will first answer the question by producing authority.

It is by no means a difficult task to show from sources of the most unquestioned respectability, both for learning and practical experience and skill, that *the world would not be the loser if mercury were struck out of existence*, even though no remedies were known which might be used as substitutes in any disease. Men eminent in the profession, and who had been for years in the habit of prescribing mercury in some of its forms, have given it as their mature opinion, that it was "doubtful whether the diseases it entails are not as numerous as those it cures," and they therefore hesitated "whether to hail its discovery as a blessing or a curse." Others, also high in the ranks of the old school, whose experience with the article was any thing but satisfactory, and who knew nothing of the modern remedies which experience has demonstrated to be far safer and more efficient for good, have not hesitated to express their doubts as to the propriety of its use, and their belief that the world is no better off for all it has done. In short, both European and American writers, whose orthodoxy can scarcely be questioned, furnish us with abundant authority to the same effect. And I intend to occupy most of this lecture by giving a variety of extracts, from writers of high authority, pertinent to the subject in hand.

The first quotation which I shall make is from an article in the *Scalpel*, a spicy and able periodical, edited by Dr. Dixon, a regular practitioner, of New York. You will see that this article does ample justice to the multifarious virtues of mercury, while it also vindicates the ability of the editor to wield the scalpel, at least in a *figurative* way, with eminent skill and ability :

"It is a very common mode of accounting for every disorder of the stomach, and which the doctor can neither explain nor understand, to pronounce the patient to be bilious. Now this biliousness is as incomprehensible and explicable as the unknown disorder ; but then it is a name to prescribe at. It is as certain that calomel is the remedy for biliousness as that biliousness is the disorder.—The medical logic runs thus: If it is not bilious, what is it? If calomel will not cure it, what will? Therefore give calomel.

"In cholera, of which the doctors seem increasingly to know less, they have found that the best medicine is calomel, and that the best mode of administering it is increasingly to give more. When they knew a little about cholera they gave a few grains now and then. Now that they know much less they give teaspoonfuls, and by the time that the disease comes again, we may expect that as, according to the law of progress, the 'Academy' will then know absolutely nothing, they will increase their remedy in proportion to their ignorance, and give tablespoonfuls. Decidedly calomel is the remedy !

"In diarrhea and dysentery, where the bowels are soured until they are unable to retain their secretions, their constituent fluids, or even the blood itself, calomel is given because it is ordered to be given by the medical authorities. Do you ask why? Beware of that self-sufficient spirit which indulges in the unhallowed license of reasoning. For once, however, we stoop to answer the impertinence of a question, and we hope to answer it finally. Calomel is given because—and we wish to emphasize our *because* with the importance due to its merits—because they do not know what else to give.

"But it is time that we treat of the more recondite qualities of calomel. No one, except a thoroughly initiated medicine man, can estimate the value of that property of calomel which gives it such efficiency as an 'alterative.' A patient is affected with something which the doctor can neither comprehend nor cure ; but by the aid of calomel he can bring on some other complaint, which will subside after a time, when he ceases to give the remedy. Here is comprehension and cure together. In the mean time the real

disorder is obscured and overlooked, or has time to get well, or is changed to something else, and there is the opportunity to make out a case, and—a bill.

“It is this ‘alterative’ property of calomel which makes it so valuable in ‘liver complaints.’ If a person have a pain in the right side and shoulder, and be ‘bilious,’ (we see you jump up to ask what we mean by bilious, and we reply very promptly that we don’t mean any thing!) of course such a person has his liver out of order.

“Of course, it is requisite to put him under an ‘alterative’ course of calomel to rectify the disorder of his liver. What the disorder of the liver consists in is no business of yours, any more than what the ‘alterative’ quality of calomel implies. Medical logic has decided that ‘calomel is alterative,’ and alteratives are required in liver disease; therefore give calomel.

“Some of the alterative effects of calomel are very apparent.—We have known stout, hearty persons altered to lean, feeble ones. Some, whose stomachs were capable of taking and digesting any kind of food, were rendered incapable of digesting any thing at all; others, who were always regular in their bowels, were so altered that they found the necessity to regulate them the future business of their life. Some have a moderate-sized liver altered to a large one; others are so altered as to lose a large portion of their liver, already diminished. Some find out that they have kidneys, who never knew it before; and many can define the exact boundary of their stomachs, by the uneasiness which they feel, who formerly did not know that they had a stomach.

“The alterative effects, however, are more sensibly experienced by night. Many who could formerly sleep the clock round experience such an alteration as not to be able to sleep at all. Those who formerly were incapable of comprehending what rheumatism is, are now capable of defining it. Their bones and ligaments now become so intensely sensitive that they are obliged to preserve them from the softest touch of the air, and a bed of down is as rough as thorns to them. They once knew not what a cold sweat meant. They now never have a warm one. The alterative properties of calomel are undoubtedly great.

“There is, however, one valuable property in calomel above all other medicines. It is this: If there is nothing the matter with the person who takes it, there very soon will be; and although before its administration it might be impossible to know or say what was the matter—if any thing,—it will be very easy to do

both, after it has been given. Decayed teeth, bad breath, foul stomach, irregular bowels, pains in the bones, weakness and weariness—are a small portion of the large catalogue of ailments which are most distinctly traceable to calomel. Dyspepsia, dropsy, and piles, or fistula, may be very easily procured by any one who will undergo a course of calomel.

“If a medical man can not find enough of disease to employ him, let him give calomel to that which he does find, and he will most assuredly find more. It may be proper in some cases to give sarsaparilla as well, but that depends upon whether the doctor sells it. If he does, let him give it by all means.”

Although very wide differences of opinion are entertained by the *special* advocates of mercurial practice in regard to its *general* influence, yet I think I am safe in saying that, in respect to its application in the treatment of two classes of affections in particular, a greater harmony of sentiment prevails among them. I refer to the different *hepatic* affections, and to the various modifications of *venereal* disease. This coincidence can scarcely be referred to the *success* attending that course of treatment, but, I think, rather grows out of the singular difficulty of giving up an established routine of practice, and adopting one of a different character. The profession is, perhaps, naturally inclined, from its conservative tendency, to follow in the “line of precedents,” whether “safe” or not, especially where the subject is involved in great obscurity. And, moreover, the difficulty referred to is not lessened by the fact that the operations of medicine are not susceptible of that precise demonstration peculiar to the sciences of chemistry and mathematics; and therefore, though a medicine may fulfill an indication so far as its sensible action is concerned, it may still be doubtful whether it has accomplished a single point in the curative process of the case. In fact, we know that it has not unfrequently happened, that medicine has essentially aggravated disease, without any suspicion, at the time, that it had any relation to the unfavorable change which followed its operation. And, indeed, physicians may have proceeded even for years in treating disease according to a particular routine of practice, supposing, meantime, that they were abundantly successful, or at least as much so as the character of the disease treated would admit, while, in fact, the course pursued was, in many instances, positively destructive of human life, as subsequent improvements and discoveries have clearly shown. For illustrations, need I cite the diametrically

opposite treatment that has, at different periods in the history of medicine, been employed in various diseases; particularly in small-pox and typhus fever? Or need I refer to the rivers of blood that have been drawn, and the tons of calomel that have been swallowed in the treatment of bilious fever?—measures which modern experience has incontestably shown are not only not curative of the real disease, but have, without a shadow of doubt, often produced fatal results. Not to be misapprehended, I will add that, in all these cases, the practitioner may have been actuated by the purest motives and most conscientious impulses, possibly never suspecting that he was doing an injury, and certainly not knowing the more successful modes of treatment which awaited the progressive march of medical improvement.

But to return to the proposition in hand. As before intimated, it has been claimed with great uniformity, that mercury is a specific for hepatic affections, and the *only* specific for venereal diseases. Now if it can be shown, by a fair and impartial trial, based upon facts and observations furnished by the highest tribunals of medical science, not only that mercury is not a specific for venereal diseases, but that these disorders can be more readily cured without *any* medication than by the aid of mercury; and if, moreover, it can be shown, on the authority of old-school writers, that it has also failed in curing or even ameliorating diseases of the liver, then, I think, the case will be made out to the satisfaction of every impartial and reasonable man, and the high claims of the vaunted specific must fall baseless to the ground.

The first authority which I have to offer is that of Dr. ISAAC HAYS, an eminent physician of Philadelphia, holding important professional positions, and editor of one of the oldest and most respectable medical periodicals in the United States, and whose opinion is entitled to the highest consideration. I quote his entire preface to the translation of a French work “On the Treatment of Venereal Diseases without Mercury,” by M. Desruelles, and you will see that the importance of the facts stated will justify the time and space occupied. Dr. Hays says:—

“The following translation of the memoir of M. Desruelles, on the treatment of venereal diseases without mercury, having been placed in my hands for revision, I have appended to it some valuable observations on the same subject by Mr. Guthrie, and various documents exhibiting the results of the different methods of treating syphilis in Great Britain, France, Germany and America.

“When it was announced by Mr. Fergusson that the venereal disease was cured in Portugal without mercury, the assertion was immediately hazarded that it must be owing to the complaint existing in that country in a milder form than in other parts of the world. The falsity of this assertion, however, was soon made manifest, by the successful treatment of many cases in Great Britain and France, without the use of a particle of the vaunted sole specific. It was then said that the cases thus cured were not genuine syphilis; and various writers, among whom Mr. Abernethy and Mr. Carmichael stand conspicuous, attempted to distinguish several affections produced by impure coition, and to designate those which might be cured without mercury, and that which could be cured only by recourse to this remedy. The ulcer so well described by Mr. Hunter as possessing specific qualities, and certain secondary symptoms supposed to result solely from this sore, were believed to be incurable without mercury; while the various other sores and secondary affections were admitted to be curable by other measures. But the characters of this peculiar ulcer, imagined to be the infallible diagnostic sign of genuine syphilis, has been since indisputably shown to result from the tissue in which it is seated, and not from any peculiarity in the nature of the cause by which it is produced. It has, moreover, been equally shown that the Hunterian chancre may be cured without resorting to the use of mercury; and this last fact is now so well established, that those who believe in a specific venereal virus, and that mercury is its antidote, have been compelled to resort to the assumption that the disease has worn itself out, and now only exists in a spurious or very mild and easily curable form. Mr. Abernethy, in his ‘Lectures on the Theory and Practice of Surgery,’ just published, remarks, ‘As this disease (syphilis) has almost become extinct, or is so modified as to be unlike that which Mr. Hunter has described, and which I had an opportunity of observing in the earlier part of my life, I do not think myself warranted in laying before the public what I have been in the habit of saying to students on this subject in my surgical lectures.’

“It would be an interesting subject of investigation, but one in which we can not indulge in this place, to inquire whether the disease be really milder than formerly, and if so, whether it be not owing to the abandonment of the mercurial, stimulating, and other irrational modes of treatment. It is sufficient for our purpose at present, that it should be admitted that the disease can be cured

without mercury; and if any one is hardy enough to deny this proposition, we refer him to the appendix, in which he will find the returns of upward of eleven thousand patients thus cured, including a very large number of cases of true Hunterian chancre, and every form of the disease that has been hitherto described.

"The *possibility* of the cure being thus established, its *eligibility* remains to be considered.

"To determine this point, it is necessary to ascertain, first, by which mode of treatment the disease is most readily cured; second, which mode of cure is most permanent; and third, and lastly, which mode of treatment is the pleasantest, and does least injury to the constitution of the patient.

"1st. *Duration of treatment.* In the official report of Sir James McGrigor and Mr. W. Franklin,* it is stated that the average period required for the cure of primary symptoms without mercury, where buboes did not exist, was twenty-one days, and with mercury thirty-three days.

"That the average period for the cure of primary symptoms with buboe was forty-five days when treated without mercury, and fifty days when treated with mercury.

"That the average period of cure of, secondary symptoms without mercury was from twenty-eight to forty-five days, and with mercury fifty days.

"When it is recollected that these results are derived from the observation of nearly five thousand cases they must be admitted to afford very fair means of comparison, and possess a high degree of value.

"M. Desruelles, from an experience in one thousand three hundred and twelve cases, states that the mean duration of treatment of primitive and secondary symptoms, without mercury, was thirty-two days, and with mercury fifty days.

"It appears from the report of M. Richond, who observed nearly three thousand patients, that of those treated without mercury for primitive symptoms, ninety-two per cent were cured in thirty days, while of those treated with mercury, only twenty-eight per cent were cured in that period; and that of those treated for

*[In the report alluded to, published by the editor as an appendix, the writers take occasion to "assure all that the following summary of the conclusions, on the question of syphilis and its treatment, may be considered as an unprejudiced statement drawn up from the answers *alone* of the regimental surgeons (British Army) to the queries transmitted by us to them in December, 1818."]

buboes without mereury, sixty per cent were cured in thirty days, while of those treated with mereury, only twenty-seven per cent were well in that time.

“Dr. Fricke states, that in his hospital, the average period of cure for primary and secondary affections, treated without mereury, was fifty days, while it was double that time in those treated with mereury.

“It thus appears from the most authentic documents, founded on experience in a sufficient number of cases, and in different countries, that the cure is effected in a shorter period of time by the non-mercurial than by the mercurial practice.

“2. *Permanency of the cure.* In those treated *without mereury* by the surgeons of the British army, it is stated by Sir James McGrigor, that secondary symptoms occurred in not quite five per cent; Richond states them to have occurred in two and a half per cent; Fricke had no case of secondary affection. In Sweden secondary symptoms occurred in seven and a half and seven per cent; in America they occurred in two per cent—making an average of four per cent.

“In those treated *with mereury*, it appears from the report of Sir James McGrigor, that secondary symptoms occurred in nearly two per cent; in those treated by M. Richond they occurred in five and a half per cent. Of those cured in the Swedish hospitals, secondary symptoms occurred in fourteen and twenty-two per cent; and in those treated by Dr. Harris, they occurred in upward of ten per cent—averaging nearly eleven per cent. If it be said that the cases treated by fumigations with einnabar should not be taken into this account, the number of secondary cases would even then be eight per cent, or double those occurring after the treatment without mereury.

“Thus secondary symptoms are shown to occur more frequently after the cure of primary symptoms *with mereury*, than when cured by antiphlogistics.

“3. It only remains for us to inquire which mode of treatment is the pleasantest, and does least injury to the constitution of the patient. That the antiphlogistic treatment is most agreeable to the patient we believe has never been questioned, and that it never produces any injurious effects on the constitution must be admitted. Of nearly two thousand cases reported by sir James McGrigor as cured without mereury, every man was fit for immediate duty on dismissal from the hospital; while of those treated *with mereury*

one man was discharged from the service on account of the injury his constitution sustained from the remedy, and another, after treatment for secondary symptoms by mercury, in consequence of that complaint. But the terrible consequences sometimes resulting from a mercurial course, are too well known to require a description; the subjecting of a patient to this treatment has always been admitted to be an evil, and the only apology ever offered is its being a necessary one. This apology having been shown to be no longer admissible, those who persist in the mercurial treatment in opposition to as large and authentic a body of evidence as has ever been collected to determine any point of practice, must offer in extenuation something more positive than their own vague notions, idle fears, or a blind devotion to dogmas founded on prejudice, and miscalled experience.

"For ourselves, in ten years practice, we have never put a patient through a mercurial course for any form of venereal affection, and for the last six years we have not used a particle of mercury in the treatment of this disease, and have never had reason to believe that our patients were less speedily or effectually cured than those treated with mercury. Of those treated by us for primitive symptoms, in the Philadelphia and Southern dispensaries, and in private practice, we know of but two cases of secondary symptoms. * * * * *

The importance of the subject, and the deep interest attached to it, will we trust, be considered a sufficient excuse for offering these observations to the public.

ISAAC HAYS, M. D."

I will only add that the statements here made by Dr. Hays were taken from documents emanating from the heads of different hospitals in Europe, and from army surgeons, whose opportunities were ample for instituting and noting the results of the most rigid comparisons in every respect; and the statistics thus obtained were embodied in reports made to the respective governments by which they were employed.

I shall now offer copious extracts from the work of M. Desruelles, which has received the indorsement of Dr. Hays, adding only such remarks as may, in a measure, serve to connect the several topics. In reference to the scope and spirit of his work, the author remarks:

"The work is a compend of all my observations made at Val-de-Grace, between the 16th April, 1825, and the 31st July, 1827. I still continue them with great assiduity, and the whole of my

observations from the latter date, with the particular results, form the materials of a second volume, which will be prepared on the same plan, and published at some future period.

“Previously to the present time, those physicians who wrote on venereal diseases published only the general results of their practice, and have not made known the proportion of cures and failures in the treatment which they had adopted. When they established theories, or laid down therapeutic principles, their only bases were approximate estimates or calculations, the accuracy of which is at least doubtful. To diffuse more light on this important branch of science, it appears to me that it would have been more proper to compare collectively and individually the symptoms and the results of the various therapeutic methods—to exhibit numerically the different results—to describe with the most scrupulous exactness every symptom—to examine the influence of the treatment upon their appearance, termination, and time of cure—to investigate all the causes, both internal and external, which in any way have had effect—to take into consideration idiosyncrasies, the state of the atmosphere, and situation of individuals—to descend to the most minute details, in order to attain general facts, and particularly to relate honestly the cures and failures which ought justly to be attributed to each of the methods employed. Most advantageously situated to pursue this untrodden and truly experimental path, I have profited to the utmost of my ability by the advantages offered me. I have endeavored to ascertain comparatively the proportional duration of the treatment of venereal diseases, with and without mercury; in the latter case, whether I submitted the patients to a vegetable and light regimen, or permitted the use of copious, substantial and stimulant nutriment, or in short, whether the local treatment were complicated or stimulating, null, or antiphlogistic. In these researches I examined all the symptoms collectively, and each one separately, whether simple or complicated; I likewise made similar comparative estimates of the progress and termination of syphilitic diseases, taking into consideration the symptoms developed during the treatment, and their probable causes. The relative frequency of certain symptoms, and the causes of that frequency, I have determined by the most exact calculations. The indication of the measures employed by me displays their influence by the more or less prompt cure of the venereal affections. I have also noted the protraction of the cure in such patients as have deviated from the regimen during

the simple treatment. In short, I have done all I could to collect every document necessary to answer a number of queries of which I can not now make mention, but which will be hereafter considered, in order to determine with mathematical accuracy, problems, the solution of which, until the present day, has been attempted only from simple probabilities. My work comprehends both primitive and secondary symptoms observed in those who have left our wards perfectly cured; these symptoms I have compared together every time it has been in my power to do so.

"Should any one imagine that I have abandoned the use of mercury entirely from prejudice, he entirely deceives himself. I have done so in consequence of the observations I have made, and the numerous facts I have collected; these have taught me to appreciate justly mercurial treatment, and made me resolve to abandon it. Very far from considering mercury as ineffectual, I had in it the most implicit confidence; it was only after having made comparative essays, with and without mercury, after having witnessed frequent lamentable consequences from its use, and reiterated relapses after the mercurial treatment, that I gradually divested myself of the erroneous opinions and prejudices I had imbibed from the perusal of the writings of other physicians."

"I soon perceived that simple dressings, and in most cases attention to cleanliness, might advantageously be substituted for unguents, powders, and irritating lotions—that the cautious use of antiphlogistics accelerated the cure of the venereal symptoms.*

"As soon as circumstances would permit me, I substituted, in place of the animal and stimulating diet, a vegetable and light one, and was promptly convinced that, however opposed might be the opinion of medical men on the nature of venereal diseases, diet is to be regarded as the true basis of the treatment, whether in this mercury be employed or not.†

"Visit all the hospitals where the old method is employed, and it will very frequently be observed that the most distressing conse-

* "I had already made this remark, and had learned to appreciate the beneficial effects of a mild and light diet, at the Hospital of the Royal Guard, when in 1819 Baron Larrey confided to me the care of a portion of the venereal patients in the absence of Dr. Laroche."

† "When I entered into the exercise of my duties at Val-de-Grace, there were one hundred and six syphilitic patients—eighty-two were afflicted with the primitive, and twenty-four with consecutive symptoms and mercurial affections. With the exception of a few who had entered but a few days previously, all the above patients were under mercurial treatment, and their nourishment was materially stimulant."

quenees ensue where the animal and stimulating diet is prescribed at the same time with mercury; and these consequences will be but seldom met with in the hospitals where patients who take mercury are submitted to a vegetable and light diet. Does not this simple remark point out to us that the dreadful affections which have been considered effects of mercury, are for the most part caused by the copious and stimulant regimen? It certainly can not be denied that mercury, administered in excess, often augments the intenseness of venereal symptoms, the system being in a constant state of irritation excited by the remedy; but these very symptoms become frightfully dangerous, when by stimulants we increase the fatal activity of the mercury. Such consequences are seldom if ever seen with the opposite treatment. Who would believe that the vegetable and light diet, whose soothing effects can not be doubted, has excited in the breasts of some both envy and ill-will against the simple treatment of Val-de-Grace. These persons have pitied, and with a zeal rather too complaisant, the patients entrusted to our care. This studied and affected pity was no doubt only a plausible pretext for concealing from the world the unhappy results of the contrary method. The note published in the *Journal Militaire* must have removed the doubts of those pretended friends to humanity, who always feign to experience the most tender solicitude for some, that by the pretext they may the more deeply injure others.

"The most authentic facts prove that there is no difficulty in pursuing our plan. Physicians who will prescribe it will perceive how efficacious it is, although they may have been partial to the mercurial method. However, to adopt the vegetable and emollient regimen with due attention to simplicity in dressings, to apply antiphlogistics to counteract external venereal symptoms, and to continue at the same time the internal administration of mercury, would be, we think, employing two opposite methods. Would not the effect of such treatment be to produce at the same time asthenia by the regimen and simple dressings, and to stimulate the organism by the specific remedies? Such is the plan of treatment we pursued in the very commencement of our career, and surely its effect should induce all medical men to abandon the use of mercury—it was at all events one of the principal causes of my doing so.

"In 1825, I conceived that it was necessary to prepare patients for the administration of mercurials, by submitting them to a vege-

table and demulcent regimen, using antiphlogistics at the same time; but while they were undergoing this pretended preparation (if we can so term it), it frequently happened that many symptoms entirely disappeared, such as balanites, simple ulcers, irritations, and slight vegetations about the anus and penis, pustulæ, and orchitis. I then had to choose the alternative of letting the patients leave the hospital without giving them mercury, or forcibly retaining them in order to administer it. Some of course left me without having taken any of this medicine, and others again who had taken too small quantities of it for me to consider their cure complete.

"In order to obviate this inconvenience, I determined to administer mercury to the patients as soon as from the influence of the simple treatment, the symptoms began to wear a favorable aspect; but I found the cure not only retarded, but more difficult to accomplish, as there was always some new symptom appearing to impede it. On account of these new observations, I resolved to make comparative experiments on every symptom individually. I devoted the year 1826 to these experiments, and finally being convinced that mercury was unnecessary, when the simple and antiphlogistic treatment had been rigidly pursued, I abandoned its use altogether, and since the first of January, 1827, up to the present day, I have not administered one single atom of mercury, whether my patients were laboring under the primitive or secondary symptoms of syphilis.

"For more than a year we have sought, without prejudice, for a single case where mercury should be substituted for antiphlogistics, but no one has presented itself. Whenever the cure is retarded, or we find new symptoms appearing, the cause can always be traced to the patient's having deviated from the proper regimen.

"Before I had acquired the habit of distinguishing by the aspect of the symptoms, whether my patients had deviated from the prescribed regimen, I thought that those ulcers styled Hunterian required the application of mercurials, but a considerable number of facts have convinced me that I was wrong, and that the Hunterian ulcers will as readily yield to antiphlogistics as the simple and phagedenic. * * * * *

"There is surely no longer any doubt but that diseases produced by the abuse of mercury, and even by the methodic use of that metal, have been confounded with the secondary symptoms of syphilis. Should the new method of treatment be generally adopted,

before long a considerable diminution will take place in the number of those symptoms called secondary, and which have been so unhesitatingly ranked among syphilitic affections.

"We instituted some experiments on dogs with different mercurial preparations, to ascertain the various modifications produced by mercury. Some received the mercurial influence by friction, and others by administering to them the corrosive sublimate in solution. All were abundantly fed with soup, meat, and bread, submitted to the usual treatment employed in the hospitals where the ancient method is still retained.

"A robust, healthy, active, and lively dog, was rubbed daily with the strongest mercurial ointment. Salivation commenced at the seventh friction, was profuse at the twelfth, but still the mercurial friction was persevered in. The animal thinned gradually, became dejected, the salivation diminished, and he died the day after the thirtieth friction, in a state of extreme emaciation. The body was opened in the presence of the students, by Mr. Cornuau, *Chef de Travaux Anatomiques* of the Val-de-Grace Hospital, and the following alterations were found :—The teeth were almost entirely bared and loose, especially the inferior incisors; the gums in a state of ulceration; the internal surface of the mouth, and the velum palati, were covered with extensive apthæ; the pharynx was red; the œsophagus in its natural state; but about the *bas fond* of the stomach there appeared scales of a dark red hue; these were likewise seen on the mucous membrane of the small intestines; the salivary glands and pancreas were reddish, and covered with numerous vessels; the bones did not appear to have suffered any change; the marrow was quite liquid, and of a reddish color; the heart was flaccid; the lungs in their natural state, and the brain gorged with blood. * * * * *

"Those physicians who are opposed to the method we employ at Val-de-Grace, although compelled to acknowledge the success of this method, will retrench themselves with apparent prudence behind the question of relapses, which they will advance to intimidate practitioners; they will require an account of those relapses, and perhaps they will even inquire the exact number and the consequent results. If in France this question be newly proposed, and yet unanswered, it is already old, and decided in favor of the treatment without mercury in all countries, where this method, imperfect as it may be, has been successfully followed for the cure of venereal diseases, both primitive and secondary. Facts collected

by many medical men, prove that relapses, consequent to the treatment without mercury, are infinitely more rare and less serious than those after the mercurial treatment. We can likewise show similar results. The slight relapses that have come under our notice, only occurred with headstrong men, who, by frequent deviations from the regimen, rendered incomplete the curative modification which should have been produced by the treatment without mercury. * * * * *

“Until now, the relapses consequent to the mercurial treatment, have not been verified with sufficient accuracy to serve as a term of comparison. They have never been properly inquired into, although frequent and serious enough to engage the attention of medical men. The wards of the hospitals were crowded with patients, who, after having remained there for entire years, and undergone several courses of mercury, were imperfectly cured of the dreadful afflictions resulting from this treatment. From the accounts we have taken, it appears that all of those who left our wards restored to health, between the 16th of April, 1825, and 31st of July, 1827, about one out of six suffered from relapses after mercurial treatment, or diseases produced by the abuse of mercury; and at the time we took charge the proportion was one in four.

“Let an impartial comparison be made between the results of the mercurial and non-mercurial method, and it will be seen that the latter, in the sole consideration of the length of treatment and the consequences, possesses invaluable advantages. It is easy to conceive that it must be so. In the following mercurial and stimulating method, the salutary tendency of the organs toward the cure, is at every instant opposed, while in the application of the mild non-mercurial method, we continually favor and follow step by step the effectual advances of nature.

“The simple method now followed at the hospital of Val-de-Grace, will no doubt be soon generally adopted in all military hospitals. Men of probity, and true lovers of science, have been directed to employ it in several hospitals of the kingdom.”* The happy results they will meet with, will soon teach them how much to value that method which has already taken the place of the old one, in several naval hospitals. It is now undergoing a trial in a

* “The members of the Military Council of Health of the camps and armies of the king have requested the health officers of various hospitals to employ the non-mercurial method, as followed at the Val-de-Grace.”

civil hospital in Paris, where an immense number of civil patients are annually received. Although in this hospital the simple treatment is not absolutely adopted, it is nevertheless prescribed, from a knowledge of the success it has obtained at the Val-de-Grace, and the first trials having been as favorable as could be expected. Successful trials of it have been made in England, Portugal, Bavaria, Sweden, Germany, North America, Hamburg, and particularly in the hospitals of Metz and Strasburgh. The English, Bavarian, and Swedish governments have encouraged the zeal of those men who have devoted themselves to this new therapeutic study; the heads of the military medical departments of these kingdoms have admitted its efficacy, and even kings, in special ordinances, have given to such physicians as propagated the non-mercurial method, tokens of their royal favor.†

“With the exception of some few who made the most laudable endeavors to overcome public prejudices, the rest of the French physicians remained servilely attached to the ancient routine, and to a theory not less absurd than tyrannical. Not long since, little sensation was awakened by the works of Thompson, Rose, Guthrie, Carmichael, Fergusson, Hennen, Gordon, Brown, Evans, Jourdan, Lefebvre, by the official note published by Sir James McGrigor and Sir W. Franklin, or by the report of the Commission of Sweden. And such is still the domineering spirit among us, that we fear to peruse the work of Mr. Jourdan; that the one by Mr. Richond meets with but poor acceptance; that the Clinique of Devergie is subscribed to with reluctance, and that the new system of the Val-de-Grace is rashly judged of by men, who entertain of it at best but an inaccurate and confused idea.

“The non-mercurial treatment has received the approbation of enlightened men, whose opinion, founded on experience, is of great weight in practical medicine. Dr. Gallée, one of the military health inspectors general of the service, informs us that he has successfully employed it in the Brest Hospital for upward of twenty-five years. Professor Chaussier adopted it a long time since; he esteems it more rational and sure than the mercurial treatment. Dr. Ribes has frequently employed it, and in his works recommends its adoption. Drs. Gama and Broussais, chief officers

† “Advice, founded on experience, against the use of mercury in venereal affections, by Francis Joseph de Besnard, Doct. Med. Inspector General of the Military Hospitals of Bavaria, Munich, 1809.”

of health in the Val-de-Grace Hospital, have witnessed the happy results I have obtained by it, and both applauded my endeavors and encouraged my zeal. Those gentlemen, and Drs. Damiron, Fleury and Begin, have applied to the venereal diseases among the wounded and otherwise sick patients in Val-de-Grace, the same method we follow, and have been always satisfied with its good effects.

“ We sincerely hope, and have good reason to believe, that the non-mercurial method will soon be received and employed by enlightened physicians, who, always disposed to adopt what is really good and useful, only wait, before deciding, for facts that may dissipate all doubts, and carry conviction with them. But it is probable that this method will be repulsed, even calumniated, by those routine practitioners, who always see with regret that the rut, through which they have so long dragged themselves along, is getting smoothed, and who remaining stationery, while science rapidly advances, prefer rather to deery its progress than follow in its wake. The method we propose has nothing to expect, nor any thing to fear, from the opinion of such men, whose opinions are as little calculated to insure the success of a new therapeutic method as to accomplish its ruin. It is therefore to us of but little importance to bring them over to our opinion—we even believe it were vain to attempt it; but we aspire to convince physicians of merit, who, too confident in mercury, believe it to be useful in every case and under all circumstances. We dare to flatter ourselves that such physicians as err unwillingly, and who, from I know not what conviction, remain attached to the mercurial method, will not absolutely reject the simple method we pursue. Undoubtedly, they will think it a duty to ascertain whether our assertions have any foundation, and whether the facts which have brought conviction to our minds be correct, whether they be as numerous as we have said, and finally, whether they prove the inutility of mercury. We most sincerely desire an impartial examination; but even supposing that the strength and number of facts which they will notice do not suffice to convince them of the inutility of mercury in the treatment of venereal affections, whatever opinion they may profess, it is utterly impossible for them not to perceive soon, and publish in their turn to the world, the necessity of simple dressings, the utility of antiphlogistics, and the efficacy of the vegetable and emollient regimen, and be constrained themselves to agree that mercury must

never be administered but with great caution. We feel convinced that in time they will abandon its use, and consider it only as a modifying agent, which may offer some advantages in certain cases. These cases must be extremely rare, for we have, during a whole year, fruitlessly sought for a single one among a vast number of patients.

“Certainly the works of our predecessors, and those who will follow the essay we now present to the public, will produce important ameliorations in the treatment of syphilitic diseases; and if, as every thing induces us to believe, our hopes are realized—if the non-mercurial method be exactly and wisely applied in the treatment of venereal diseases—can we be blamed for saying that it will be a true blessing to mankind? In fact, it will render these affections gradually less severe, and will assuredly diminish the number and gravity of the symptoms, which complicate them during the mercurial treatment. We will no longer see those shameful and indelible marks which have disturbed the tranquillity of so many families, and embittered the existence of those who suffered them. The long train of mercurial diseases, those chronic and disorganizing affections, the dangers of which increase and multiply in proportion to the number of doses of mercury employed to remove them, will disappear never to return; syphilitic symptoms will no longer assume the terrible forms assigned to them hitherto; their phenomena will be simple, their cure rapid, and without relapses; in short, the hospitals for the reception of venereal patients will no longer present the hideous spectacle which many of them now do. These consoling ideas, these flattering hopes, are undoubtedly sufficient to excite the zeal of all men desirous of serving the interests of science, and contributing to the welfare of their fellow-creatures.”

I will conclude this part of the subject by reproducing the testimony of M. Ricord, of Paris, the distinguished and eloquent medical instructor, whose opinion, based upon results of treatment in thousands of cases, must carry conviction to the minds of all but the hopelessly bigoted. M. Ricord remarks: “In fulfilling the therapeutical indications which may be presented by the different pathological states which attend this variety of chancre, we must be careful not to fall into a common error of attributing the disastrous and rapid course of this variety of chancre to the nature of the specific cause or greater intensity of the virus, and thus be

led, like the partizans of the old school, promptly and energetically to have recourse to the use of the pretended specific, and administer mercury in doses proportionate to the strength of the specific cause they wish to neutralize. Let it be remembered that the principle of syphilitic diseases is always the same, as in variola, and the differences only depend upon the individual peculiarities, and treat this disease, like all others, rationally.

"I can confidently assert that, except in a very few cases, the so common employment of mercurial preparations, either as dressings or internally, are most hurtful in phagedenic chancres, and the more so as not being accompanied by induration, there is much inflammation and nervous irritability. It is by no means uncommon to see these ulcers, when approaching the period of reparation, relapse under the influence of mercury into their former state, and chancres which were at first limited and regular, become phagedenic, simply from the employment of mercury."

Further on, the same author says: "From our remarks in another place, must we in all cases renounce mercurials and anti-syphilitic remedies? It is true that in most cases of these affections mercury, sudorifics, etc., are more prejudicial than useful: there are, however, instances in which they have produced good results; but we are at present unable to indicate the precise circumstances in which mercury is useful or even indispensable. If the disease progress notwithstanding the means pointed out above, I have then recourse to this medicament, which was so long and often considered as specific; first, in local applications, and then as a general agent internally or by the skin, according to circumstances which I shall afterward describe. I continue the local or general use separately or combined, according to the effects obtained, if there be improvement; but if the disease increase, I suspend them. In those cases, where, according to ancient errors, it is thought necessary to begin by mercurials, which I would not advise, we must not be so blind as to continue their use when we see their evil results."

Adding only that my experience, which has been extensive, fully confirms the statements thus exhibited, with the improvement that the primary disease, in my own practice, seldom lasts longer than from five to ten days, I here dismiss this part of the subject, believing that every candid and impartial inquirer after truth must render his verdict against the claims of mercury as a specific for venereal disease.

In regard to the application of mercury to liver affections, I shall not be able to present the extensive comparisons of different modes of treatment that I have done in regard to venereal diseases. Hepatic affections being perhaps of less frequent occurrence, especially in armies, and not so imminent and disabling, no such advantages as in other diseases have been afforded for special observation and comparison in the various hospitals. I shall therefore have to rely upon individual opinions based upon the results of practice. This subject will be resumed to-morrow.

LECTURE LVIII.

LOCAL DISEASES—CONTINUED.

Mercury continued : Its application to hepatic disorders ; Witnesses pro and con ; Quotations from Dr. Tweedie and others ; Want of unity ; Mercury ruled out in structural disease ; Also in functional ; Quotations from Dr. Hamilton ; Mercury a poison ; Changed to corrosive sublimate in the stomach ; Injurious effects in various affections ; Observations of Dr. Hamilton and Dr. Curliſle ; the author's views and experience.

MERCURY—CONTINUED.

What appears to be the concurrent testimony of so many authors and practitioners in favor of the use of mercury in the treatment of liver affections, it may be urged, can not be overbalanced by the opinions of the few that may be found in opposition to its employment. But it should be considered that the treatment of hepatic diseases with mercurial preparations, has been regarded as “regular,” and as such has been received by students from their preceptors or text-books with unquestioning confidence, and followed as a matter of course. In other words the mercurial practice with the mass of the profession, has been pursued as a mere routine course, recognized by authority and convenient for the practitioner. Thus the number of its advocates and followers has, I acknowledge, been multiplied, but their testimony has, in the main, been merely a reiteration of opinions and doctrines of the few who took the lead in favor of the remedy in question. Even many of those who have been compelled by experience to lose confidence in the “regular” treatment, and who have had independence enough to vary in some measure from it, have been so thoroughly imbued with the idea that mercury in some form must be the specific for hepatic affections, that their efforts at improvement have been confined to attempts at modifying the remedy, and the mode of its application. On the other hand, most of those whose voice is raised *against* this drug have overcome their own prejudices of education, have not only observed the melancholy results following the use of, and sought for

improved modes of applying mercury, but, leaving the beaten track, have discovered and tested agents found to be capable of accomplishing all the good ever derived from mercury, and never followed by its deleterious consequences. Their opinions are not, therefore, second-handed or traditionary, but the result of research and personal observation. So that among actual observers of facts, and independent seekers for truth, there is not arrayed on the side of mercury the numerical preponderance which the superficial observer might expect to find.

But this is not all. Even those who still feel a lurking favoritism for this idol of the profession, do in reality condemn the mercurial practice. Quotations might easily be made from writers of unquestioned authority who, clinging as they do to the agent as necessary in some cases of hepatic disease, condemn it in others for which it is highly and constantly recommended by their contemporaries. Others again demonstrate its evil results in these very cases, but still regard it as a useful remedy in other forms of disease, while others are led by observation and experience to entertain suspicions that even in the few cases of hepatic disorder for which they still employ this mineral it might be readily dispensed with; for while they have often witnessed its want of success in the cure of liver affections, and the injury resulting from its use when thus employed, they have also frequently observed disorders of the liver produced by the administration of mercurial preparations for other diseases.

Dr. Tweedie says: "It is a well-established fact that mercury, administered as a remedy, causes hepatic disease, which presents itself sometimes under the distinct character of hepatitis, and sometimes under the more obscure garb of jaundice," etc. "Dr. Dick, who practiced long in Calcutta, states, in a letter to Dr. Saunders, that he has often observed chronic liver attacks succeed to long courses of mercury undergone for the cure of venereal complaints. Dr. Cheyne, in the space of two years met with three cases of jaundice produced by mercurials; and he had been credibly informed of its appearing in large venereal establishments during the exhibition of mercury. Dr. Nicholl when serving in India in the 80th regiment, occasionally observed hepatitis come on a *few days*, but often *weeks*, after a mercurial course for a venereal complaint; a great proportion of the soldiers who had been treated for syphilis suffered from inflammation of the liver; and in eight instances the same effect was produced by the exhibition

of mercury administered for the cure of chronic ophthalmia. Dr. Chapman of Philadelphia, relates a case of similar description, and ascribes the prevalence of hepatic complaints in his neighborhood to the employment of mercury in the cure of autumnal fevers; he also states on the authority of some old practitioners, that previously to the introduction of the mercurial practice into that district, hepatitis was scarcely known in it."

It is difficult for me to accredit the opinion that a remedy can cure the same disease that it creates, and I am therefore led to infer that the cases in which mercury ever has any beneficial effect in liver affections are not of an inflammatory character, but cases of venous congestion, and that even here its beneficial influence is so readily accomplished by other and safe means that the argument for its administration falls to the ground. Mr. Annesley insists on the difficulty and impossibility of inducing salivation so long as the inflammatory action is unsubdued, and conceives that the use of mercury so long as this is the case, favors the formation of abscesses. In these views Mr. Twining fully concurs.

Thus while it is admitted that mercury should not be administered in *active inflammation of the liver*, and that abscess of that viscus is liable to follow its operation in such cases; it is contended by the same authors that it should not be given when the inflammation has passed into *suppuration*. Dr. Tweedie also remarks, "But if medical practitioners differ as to the indications which mercury is intended to fulfill in the treatment of hepatitis, scarcely less do they differ as to the mode of its administration; as to whether the system ought to be brought under its influence, according to technical phrase, by small doses repeated at short intervals for a considerable length of time, or by larger doses administered at more distant intervals." These quotations not only show a want of unity of sentiment in regard to the administration of this remedy and its effects upon the system, by those who are daily in the habit of using it, but in my judgment afford reason to believe that the curative influence of the remedy has been greatly over-estimated in every disease. Again says Dr. Tweedie, "That the number of practitioners in India who rely solely upon the mercurial treatment of hepatitis without the employment of venesection has in recent times greatly diminished, we have much satisfaction in believing; but that they are wholly extinct must not we fear be supposed.—Sir G. Ballingall in 1818, and Mr. Annesley ten years later, speak

of the prevalence of this mode of practice with unqualified reprobation.” * * * * *

“According to the best authorities of the present day the proper period in inflammatory affections of the liver for commencing the use of mercury is after the violence of the attack has in a great measure been subdued by the ordinary antiphlogistic remedies.—Exhibited at this period of the disease, it has been supposed by some of the most experienced authors, to remove accumulations of acrid bile, to diminish sanguineous congestion and to obviate the tendency to chronic inflammation which frequently remains after the acute symptoms have subsided. Whether these purposes might not be equally effectually accomplished by other means, is a question that could only be ascertained by very cautious trials in a considerable number of cases, and on which we do not feel ourselves entitled to offer a judgment.” The language here employed certainly renders the confidence of the author in the propriety of using mercury in any condition of the system for hepatitis very equivocal, and is also strongly indicative that he believes other remedies can be given to fulfill the indications supposed to be answered in the use of that agent.

In speaking of the use of mercury in the more chronic form of hepatic affections, the same author remarks, “When we come to inquire into the objects contemplated by practitioners in the administration of mercury in the more chronic and structural diseases of the liver, it is no longer the mere regulation of the secretion or excretion of the bile, nor the diminution of the force of the circulation, that are assigned as the motives for its employment; but it is to promote the absorption of morbid depositions. Of the power of mercury in stimulating the absorbent system many familiar illustrations might be quoted, as the disappearance of dropsical effusions under its administration alone or in combination with diuretic medicines; the removal of the lymph effused in iritis; the diminution of indolent enlargement of absorbent and secretory glands. But these are salutary changes which *nature frequently* accomplishes for herself or with but little assistance; and it may be fairly questioned whether any of the structural alterations of the liver not of an inflammatory character, which do not undergo spontaneous resolution, ever disappear under, or in consequence of, the administration of mercury. At all events, the prejudicial operation of mercury in the chronic structural affections of the liver, is recognised by a number of high authorities. Mr.

Thomas Clark mentions that he had frequently known very bad effects produced in liver diseases from the too violent operation of mercury. 'Nay, it has often appeared to me,' says he, 'that even when it has removed the disease in the first instance it has laid the foundation for a relapse which proved fatal. The excessive debility occasioned by a violent mercurial course readily accounts to me for such consequences.' Dr. Dick, whose experience in liver complaints both in India and England was very extensive, also notices the great liability of those complaints to return when treated with mercury. Nor is the view taken by Drs. Pemberton and Saunders of the effects of mercury in this class of cases more favorable.

"To those who participate in the opinion we have ventured to express of the injurious effects of mercury on the economy, even when very cautiously administered, and who at the same time are impressed with the belief that the affections of the biliary organs require specific remedies for their treatment, it can not but be gratifying to find in how high estimation the nitro-muriatic, as it has been called, exhibited both internally and externally, is held by India practitioners in the treatment of these diseases."

Having thus given you the substance of what is said, on the subject of the use of mercury in the treatment of the acute and chronic inflammatory affections of the liver, by one of the most able and learned authors of modern times, I can not but ask every candid mind, after reading all that highly reputable work contains, if they could possibly pursue the course of mercurial medication for the diseases of that viscus to which I have referred, with any confidence that it would be successful? On the other hand, are there not the most palpable indications that the remedy is not only not reliable in those affections, but that it is often positively injurious and frequently in fact produces hepatic disease? And even when patients do recover from those affections while under the influence of mercury, it is more than intimated that it is nature and not the medicine that effects the cure. The doctrines taught are interesting to me, in view of the great confidence that is there entertained in the curative effects of the nitro-muriatic wash or bath as contrasted with the beneficial effects of mercury, and the congratulation that is manifested in the hopeful expectation that the uncertain and equivocal mercurial preparations are to be superseded by the new remedy as it is called. It is certainly gratifying to observe with what enthusiasm the *liberal* members of

the profession hail the advent of a remedy that promises to take the place of that dangerous and uncertain one, which has so long held the profession in bondage in the cure of many disorders. What may we not expect therefore from such members of the profession when they shall learn, what myself and others have in thousands of instances demonstrated, that these same affections can be, most of them, successfully treated, and that too with remedies that are as far superior to the nitro-muriatic bath, or the nitric acid internally, as their most sanguine hopes have suggested for these, in place of mercury.

But this is not the only testimony that I have to adduce against the mercurial treatment for chronic hepatic affections. Dr. James Hamilton says, "The ordinary mode of exhibiting mercury for the cure of chronic hepatitis in this country, not unfrequently hurries on the disease, or by impairing the constitution, lays the foundation, for paralytic affections, and it may be truly affirmed that it thus often shortens life." Says Dr. Farre, "Patients suffering under the disease (chronic liver affection) are not as far as I have observed, benefited by the operation of mercury."

Having considered the use of mercury in the *structural* affections of the liver, I have now to detain you a short time in referring to the same author first quoted for his views of the use of mercury in its *functional* disorder. Dr. Tweedie says, "The following indications of treatment as applicable to the several forms are: 1st, to diminish biliary secretion when excessive; 2d, to increase this secretion when deficient; 3d, to correct it when vitiated; and 4th, to promote the excretion of bile and the removal of spasm of the biliary passage.

"The first indication then to be considered, is that of diminishing the hepatic secretion when it is in excess. Independently of any specific power which is attributed to mercury in this respect—a matter hereafter to be considered—it is only by avoiding the occasional causes of increased biliary secretion that this indication can be fulfilled, viz: by avoiding exposure to high temperatures and by diminishing the quantity of animal food. * * *

"The second indication, that of increasing the biliary secretion when it is deficient, is *supposed* to be effected by a class of medicines that have been denominated cholagogues, respecting the exact mode of the operation of which a great diversity of opinion exists. The remedy of this kind on which most reliance is placed by British practitioners is undoubtedly mercury, and we shall

afterward find that its efficiency is *supposed* to depend, by some, on its possessing a specific power of directly stimulating the biliary apparatus, while others attribute its efficacy on the liver to its action on the intestinal canal as a purgative.

"If we were acquainted with the precise purpose which the bile fulfills in the function of digestion, we should be assisted in judging what aid medicine can afford for remedying its deficiency. Those who suppose that its action consists in correcting acescency may imagine that its place may, in part at least, be supplied by alkaline remedies. Those who conceive that the bile promotes digestion by stimulating the peristaltic motions of the intestines, must consider purgative medicines as the proper substitute for its deficiency. Leaving out of view judgment, and looking only to the results of experience, we find that the most beneficial treatment in cases of deficient biliary secretion consists in, 1st, the careful regulation of the diet as easy of digestion as possible; 2d, the administration of bitter tonics; and 3d, of laxative or purgative remedies, so as to keep the bowels gently open. 'The temporary defect of bile,' says Dr. Saunders, 'may be supplied by various bitters, occasionally united with rhubarb, aloes and the like.'

"Whatever may be the purposes of bile as a secretion, it can not be doubted that the formation of this substance is not of less consequence as an excretion that secures the elimination of some principle noxious to the system. When, therefore, the bile either is not secreted or is reabsorbed after being secreted, have we any means of correcting its injurious effects? Little, we believe, in the way of palliation is in our power in this respect. In the very small number of cases, in which an attack of coma, supervening on jaundice, has been successfully combated, the benefit seems to have been derived from purgatives, and such applications to the head as are suggested by the apprehension of inflammation of the brain.

"The third indication is to correct the biliary secretion when vitiated. The degree of control over the acid or alkaline character of the urine, which has been derived from a more accurate knowledge of the morbid states of that fluid, has excited hopes of similar success with regard to the vitiations to which the various glandular secretions are subject. It must be admitted, however, that the knowledge we at present possess of the biliary secretion in health and disease, does not enable us to lay down any rational indications for the correction of its morbid conditions, with the exception of

the treatment required in cases of biliary concretions, which will be presently noticed.

“The fourth indication of treatment which we have specified, is that of promoting the excretion of bile and the removal of spasm of these canals, supposing them to be muscular. When the bile is accumulated in its passages, in consequence of torpor of the powers by which it is naturally propelled, or of some slight mechanical obstruction, the administration of emetics, by calling into action the diaphragm and abdominal muscles, and thus compressing the liver, may effect this indication.”

On the subject of biliary concretions the same author remarks: “The measures which in practice have been found most efficacious in fits of gall-stone are the administration of opium, the warm-bath, the warm fomentations, emetics, and sometimes blood-letting.”

I have been thus particular in citing to you what is said in one of the most learned and modern works on the subject of medicine, upon the various indications for treatment in the several functional disorders of the liver, and the means which are in that work advised for the purpose of fulfilling those several indications, in order to show, without being chargeable with misstatements, that the author does not himself recommend mercury in any of them, and only states in one instance what is the usage among British practitioners, with a most clear intimation of the equivocal estimation in which he himself holds it. While on the other hand, in those affections we have been considering, in which ordinary practitioners would always recommend that drug, he does not refer to it, but recommends reliance on other measures entirely. Thus, both in the various organic diseases of the liver and the different functional disturbances to which that gland is subject, do we find not only that the learned author does not recommend mercury for their treatment, but sanctions, in the most forcible language that can be used, the objections that are urged against its use for those disorders by other writers; himself certifying to the calamitous consequences that are often inevitable when mercury is used for any disease whatever.

I can not refrain, while on this subject, from reading to you a few short extracts from the work of the celebrated Dr. James Hamilton, Professor of Midwifery in the Edinburgh University, on the use of mercury in the treatment of various disorders.

Dr. Hamilton says: “Among the various *poisons* which have been used for the cure or alleviation of disease, there are few which

possess more active and of course more dangerous powers than MERCURY. Even the simplest and mildest forms of that mineral exert a most extensive influence over the human frame, and many of its chemical preparations are so deleterious, that in the smallest doses they speedily destroy life. Accordingly, for some ages after mereury became an article of the *Materia Medica*, physicians recommended it only on the most urgent occasions, but within these few years British practitioners seem to have overlooked the necessity for such caution, and to exhibit that medicine with very little scruple."

In describing the therapeutic action of mercury, the same author remarks: "The first effect enumerated, is an increased action of the heart and arteries; that is, a more than usually rapid circulation of the blood through every part of the body. This also occurs in fevers and inflammatory disorders, accompanied by an augmentation of animal heat. Accelerated circulation of the blood, in consequence of the use of mercury, is attended with the most obvious of the circumstances which arise from inflammation.

"Blood drawn from the arm of the most delicate and debilitated individual, subjected to a course of mercurial medicine, exhibits the same buffy crust with blood drawn from a person laboring under pleurisy. In inflammatory diseases, the muscular strength, in many instances, continues unimpaired until toward the termination of the complaint. Thus every practitioner knows that individuals laboring under pleurisy have walked several miles within a few hours of death. But from the time that the influence of mercury becomes evident, the general strength declines rapidly, and is apt to excite restlessness, anxiety, general debility and a very distressful, irritable state of the whole system."

After enumerating various other injurious effects of mercury upon the general system, among which is mentioned a peculiar affection of the skin observed by himself and various other respectable physicians, the same author says: "These morbid effects of mercury do not seem to depend entirely upon the quantity or mode of preparation of that medicine which may be administered to the individual; for while it is an established fact that the mildest preparations employed externally, if exhibited in too large doses, or continued for too great a length of time, are followed by the bad effects above enumerated, it is also notorious that very small quantities of mercury have suddenly proved equally injurious. Thus in a lady (whom the author attended a number of years ago) who

had had small doses of the blue pill combined with opium, for three nights successively, that the whole quantity amounted to no more than five grains of the mass, salivation began on the fifth day, and notwithstanding every attention, the tongue and gums became swelled to an enormous degree, bleeding ulcers of the mouth and fauces took place, and such excessive irritability followed, that for nearly a whole month her life was in the utmost jeopardy. Every practitioner must have met with similar cases." "Various other anomalous affections have been known to succeed the use of mercury. Thus, Dr. Falconer mentions, that he 'once saw a dropsy of the breast produced by the use of mercurial remedy for redness in the face, which it effectually removed, but instantly produced a dropsy of the chest terminating in death.' Dr. Alley asserts that he had seen an eruption appear over the entire body of a boy about seven years old, for whom but three grains of calomel had been prescribed, ineffectually, as a purgative."

"A lady (says Dr. Hamilton), the mother of four children, in the twenty-eighth year of her age had a bad miscarriage at the end of the fourth month. When the author was called she was very much reduced from the loss of blood, and required the ordinary palliative remedies. Three days after the first visit she complained of a bad taste in her mouth, with soreness of the gums, and on the following day salivation took place. On inquiring into the circumstances of her previous history, it was learned that, four years before, she had had for a fortnight a course of blue pill, which had only slightly touched her gums, and it was solemnly asserted that she had never again taken any preparation of mercury, and had been in general good health. The salivation was therefore attributed to some accidental cause, but when it was found to be proceeding with great violence, the medicines which the lady had been taking for the palliation of her complaint produced by the abortion, were carefully analyzed from a suspicion that some mercurial preparation might have been mixed with them, but it turned out that they contained no mercury. The most anxious and unremitting attention, and the careful exhibition of all the ordinary remedies which have been employed in similar cases proved unavailing. The salivation, with the usual consequences of emaciation, debility and irritability, continued for above twelve months. Occasionally, for a day or two, it was checked, but alarming vomiting, with threatening sinking of the living powers, supervened."

The most substantial arguments—in addition to those of its vio-

lent and uncontrollable effects upon the system—that can be urged against the administration of any medicine, bear with most undoubted force against the use of mercury, even in its mildest preparations. Says Dr. Hamilton: “It is universally acknowledged that the morbid effects of mercury may be induced very suddenly, and by very small quantities of the medicine, in certain constitutions where no marks exist by which such peculiarities of habit can be distinguished, and there is no method of arresting their progress.” Thus, though the mildest preparation of that mineral may be administered in the treatment of disease, we can have no assurance, nor are we in possession of any means of determining, that it will not, by the hydrochloric acid that habitually exists more or less in the stomach, be converted into the most deleterious and fatal poison, corrosive sublimate. This chemical change is very liable to take place when calomel is administered, as only one proportion more of chlorine is necessary to convert the chloride of mercury (*calomel*) into the bichloride (*corrosive sublimate*), and thus form in the stomach a chemical, corrosive poison.

Having thus shown the general constitutional effects that are liable to follow the use of mercury in the treatment of various diseases, and the dangerous and uncertain results that may and often do supervene upon its administration, from chemical changes that no scientific research will probably ever be competent to detect beforehand, I will detain you a short time in reading to you some evidence of its singularly injurious effects in some of the most common disorders, and for which mercury is not only often prescribed by practitioners, but is also used in domestic practice. Dr. Hamilton says, in speaking of dyspepsia, “that mercurial preparations can be neither safe nor beneficial. If there be evidence that the food has undergone a diseased change in the stomach itself, practitioners ought absolutely to refuse sanctioning the use of mercury. The author can truly affirm that in several cases to which he has been called, where the patients had been put under a course of mercury for stomach complaints, the irritable feelings before described were in a much more violent degree than he ever witnessed from the same medicine given in other diseases. Nor is it wonderful that this should happen, since it is well known that one of the most common disorders occasioned by the use of mercury is in digestion.”

In speaking of its effect on the bowels, Dr. Carlisle says, “It

disorders the digestive powers of the stomach; and in debilitated persons the frequent employment of it sinks the strength and provokes hemorrhoids." "And it is most evident from what has been previously said," says Dr. Hamilton, "that no physician can calculate with any degree of certainty on the safe operation of mercurial purgatives." "By these remarks the author does not mean to allege that there are no cases whatever in which the blue pill or calomel ought to be employed for the purpose of opening the bowels, but he has strong objections to the *frequent* and indiscriminate use of such powerful and dangerous means. No prudent traveler would climb a precipice if he had a sure road along the foot of the mountain."—In this connection I must be permitted to remark, that from long experience with the pill of taraxacum, podophyllin and leptandrin which I have so often recommended to your favorable consideration, I am prepared to claim that its use is not only the "sure road along the foot of the mountain," but that it presents a broad, unbroken highway, in which no interruption may be expected nor difficulties encountered, in fulfilling those indications for which mercury can ever be safely given. For the truth of this statement I have numbers of the most notable instances in my experience, where individuals had taken mercurial remedies for various disorders and relied on it with a confidence amounting to affection, and therefore tried other means with great hesitation and only parted with it as with an old friend, who are ready to testify that the pill referred to not only operates more promptly upon the biliary secretion, but more mildly than the mildest preparation of mercury. And they had been in the habit of taking blue mass on all occasions when medicine was needed, as the sovereign "cure for every ill." Dr. Hamilton says "daily experience may perhaps be urged against the rule of giving mercury often without any evil effects, as it may be alleged that in every complaint of infancy and childhood, calomel, within these few years, has been had recourse to, not only by practitioners, but by parents and nurses; a practice which must have been long ago exploded if bad effects had ensued." "This argument" says he, "when duly examined will be found more specious than valid." "The operations of many medicines and particularly the metallic oxides, are not easily ascertained even by professional men, and far less can they be traced by ordinary observers. Although a dose of calomel may seem merely to affect the stomach or bowels, it may by its

influence upon some latent disorder, such as tubercles in the lungs or slight enlargement of the mesenteric or other glands, give activity to a disease, the source of which might otherwise have been removed by the natural powers of the constitution. The author has for several years been impressed with the conviction of this important truth." "That there are many individuals who have, with impunity, taken calomel as a purgative is not to be denied; but it is equally true that extreme irritability of the stomach and bowels, ulceration of the mouth, with caries of the teeth, dropsy, epilepsy, and various other modifications of disease have followed the use of that preparation. In several cases the author has decidedly ascertained, that ulcerations of the villous coat of the intestines of infants and young children, have been induced by the frequent repetition of doses of that medicine."

Mr. Carlisle says, "that grave men should violently persist in directing large doses of calomel (and I consider any dose above four grains to be large), and order these to be daily reiterated in chronic and debilitated cases, is passing strange. Men starting into the exercise of the medical profession from a cloistered study of books and from abstract speculations—men wholly unaware of the fallibility of medical evidence—and unversed in the doubtful effects of medicines, may be themselves deluded, and delude others for a time; but when *experience* has proved their *errors* it would be *magnanimous*, and yet no more than just, to renounce both the opinion and the practice."

Dr. Blackall says, "It appears to me that no accidents proper to the disease can account for all those fatal conversions to the head, which of late years have so frequently taken place in the fevers of children; and I have on some occasions been disposed to attribute them to excessive and repeated doses of calomel, which either not moving the bowels, as was expected, have given evidence of being absorbed, or on the other hand, have purged too violently and been succeeded by diarrhea without bile, and a prostration of strength, from which the little patient has never risen. Its less severe effects are sometimes of no slight importance; a slow and imperfect recovery, a languid feverish habit, and a disposition to scrofula."

I have thus endeavored to present to you a careful synopsis of what has been said of the injurious effects of the mercurial preparations upon the system in the treatment of some of the leading diseases for which it has been more generally prescribed, as well as

some of a less conspicuous character. I think I have shown by the very best and most impartial authority, that those diseases for the cure of which mercury stands pre-eminent among a large majority of the profession, can, with greater certainty of success and more promptness, be treated by other means, and that without any of those hazards that are incident to the use of that mineral.

Without dwelling at greater length on this subject, I will simply refer you to the treatment of hepatic diseases as heretofore directed, in which you will recollect I have not recommended any of the mercurial preparations, for the best reason that can be given, I am fully convinced they can be more successfully treated without.

In conclusion then, let me ask, what are the claims of mercurial remedies in a general point of view? How stands its character in the cure of bilious fever? Is it here, as once supposed, the *sine qua non*, the main reliance, or even an important adjuvant in the removal of that affection? If the experience of more than twenty years, in all its various manifestations, in a Western valley of extensive alluvial and secondary formations, where it is constantly found, were not sufficient to answer this question and forever negative the claims of mercury in this disease, the hosts of departed spirits once manifested through the stalwart frames of the hardy pioneers of this Western clime, who were forced to premature graves in the prime of life, notwithstanding the profuse administration of this and other heroic measures, might be invoked to settle and determine this interrogation. It is, however, fully settled and will shortly be forever set at rest, that mercury is not in the least curative and never necessary in the treatment of this class of diseases.

What are its rights, and what its claims in the treatment of yellow-fever, and of cholera? Set aside the statistics as far as opportunity has offered for comparison in the treatment of these two diseases with and without mercury, does the calamitous results of those two scourges of nations and cities, in the treatment they have received in the hands of the mercurial advocates, bring their trophies of success to sustain the claims of that drug in those disorders? We have but to recall the mournings and lamentations that were heard from one end of the world to the other, produced by the desolations of cholera; while the fearful mortality of yellow-fever, calling for aid to succor the distresses of the sick and dying in a neighboring city, the past year, is a most pungent and solemn

commentary upon the remedies used for its cure, and none will doubt that mercury stood foremost.

In typhoid fever its claims have been waived, and at the present time few are found to recommend it in that affection.

It is therefore being hedged in on every side, or more properly, cast out as a worse than useless drug. And I have a presage that the time is not far distant, when the name of the infamous Paracelsus who first introduced it, will therefor have another laurel added to his wreath, by universal consent, of the same character as those which now adorn his brow, and then none will deny him the well deserved title, "Prince of Quacks."

LECTURE LIX.

LOCAL DISEASES—CONTINUED.

Splenitis: Parts of the Organ involved; Symptoms; Generally associated with Fever; Autopsy; Prognosis; Diagnosis; Causes; Treatment. Chronic Disease of the Spleen: Great diversity of Symptoms and Conditions; Enlargement most common; Causes; Morbid Anatomy; Prognosis; Treatment.

SPLENITIS OR INFLAMMATION OF THE SPLEEN.

The peritoneal investment of the spleen is often the seat of inflammatory action. This is especially the case in acute forms of splenitis not preceded by derangement of the organ. Its parenchyma also may become involved. Indeed, it is difficult to conceive of an active inflammatory condition of either part, without the others becoming more or less affected, and the same may be said of all contiguous structures. There is nevertheless a marked difference between the symptoms of disease in the different parts. When the peritoneal covering is more particularly involved, it is accompanied with a higher grade of fever, the pain is more severe and lancinating, and there is great tenderness upon pressure. But when the structure of the spleen is the seat of inflammation, the pain is more obtuse and dull, and the tenderness much less. Of course the pain in all cases will be felt in the left hypochondriac region. In some cases, as in diseases of the liver, there will be pain in the top of the shoulder, and this is apt to be aggravated by coughing or other movements. The characteristic pain will also be aggravated by lying on the left side, in consequence of the pressure of the stomach and intestines upon the spleen, while in diseases of the liver, that position occasions a distressing tension of the ligaments of that organ, to relieve which patients are disposed to lie on the side affected. Sometimes the pain is so obscure and transient that the nature of the disease can be recognized only by pressure under the short ribs of the left side. The contiguity of this viscus to the diaphragm and lungs occasionally develops a slight hacking cough, and difficult of breathing or shortness of breath.

Symptoms.—The disease is usually preceded by a chill, which is

soon followed by febrile reaction. Almost every case in my practice has been associated with intermittent, remittent, or some form of malarial fever. As would readily be supposed, when it is associated with malarial influences, and, not less probably, when it is the primary disorder, all the functions of the body are disturbed. Irritability of the stomach and vomiting frequently accompany the disease, and in some instances blood of a dark, grumous character is thrown up from the stomach. The skin is dry, husky and increased in temperature, the tongue is covered with a whitish coat, and the pulse considerably excited. The bowels are generally costive, though diarrhea may be attendant.

Whether all these symptoms result from inflammation of the spleen, or whether from the febrile reaction, is, perhaps, not so clear as it would be if splenitis, in its uncomplicated character, had been more frequently met with. I do not now recollect of having met with more than one case of acute inflammation of the spleen which was not *associated with some form of fever*. In this case the spleen was dislocated and had passed down into the left iliac region, occupying a large space above the groin. If it be asked if I might not have been mistaken in my diagnosis, I answer, probably not. For I learned from the history of the case, that the patient—a young lady—had been the subject of intermittent fever. As usual in such cases, what is called “ague cake” was formed, and the patient herself had observed its gradual descent to the position I have mentioned. Inflammation supervened. An abscess was formed, and the characteristic discharge on opening it confirmed my opinion. This was the same case which I described in a previous lecture on the subject of intermittent fevers (Vol. I., pages 289–’90). I am convinced that purely idiopathic inflammation of the spleen rarely occurs, but you will frequently find splenitis associated with the periodical fevers of the West, and in a large majority of such cases I have no doubt all the inflammatory symptoms will promptly pass away upon the administration of the proper antiperiodic remedies. I am speaking of the *acute* form of splenitis. In its chronic form it would be different.

On account of its almost universal association with general derangement or with disease of other organs, the *autopsies* of this disease give but little clue to its real pathological nature. It has been found in every conceivable condition. But as far as I have observed, its associations have been such, that post-mortem investigations have furnished few of those specific phenomena which

might be looked for in its uncomplicated form. In most cases of fevers in this country, the spleen is found more or less diseased, exhibiting most peculiar appearances. It is sometimes exceedingly congested, the cellular structure being highly engorged with dark, venous blood. At other times it is enlarged by a kind of morbid assimilation, without being congested. This, however, pertains more to the chronic affection. It often becomes friable, and, when torn, exhibits a granulated appearance. We sometimes find it in a state of suppuration, or it may have suppurated and discharged internally, and thus produced peritonitis, or a small abscess may have been formed and the matter absorbed. The surface is generally coated with coagulable lymph. These are its conditions when associated with remittent, congestive and yellow fevers, and in these cases it is often completely engorged with dark, grumous blood, which has probably decomposed. It is sometimes, though rarely, associated with typhoid fever.

The *prognosis* of inflammation of the spleen, whether it occurs as an original disease, or is associated with other affections, may be considered decidedly favorable, rarely proving fatal of itself.

Diagnosis.—The only diseases with which it is liable to be confounded are rheumatism or neuralgia, and pleurisy. It may be distinguished from rheumatism by absence of swelling and tenderness upon pressure, in the latter disease, and by the changeable character peculiar to rheumatic affections. The absence of fever and other constitutional symptoms in neuralgia, and the presence of local symptoms in splenic affections, are distinguishing marks. From pleurisy it will readily be distinguished by the distinct tumor and soreness which an examination of the spleen will discover, and by the absence of symptoms characteristic of pleurisy. Furthermore, in pleurisy the constitutional symptoms are more severe and the pain is more severe, lancinating, and higher up in the side.

Splenitis may be *caused* by external violence, or severe muscular efforts, as by hard lifting or running, by suppression of customary evacuations, by metastasis of other diseases, by malarial fevers, and other causes.

In the *treatment* of this disease, the first consideration is to remove the febrile association, by which it is so frequently influenced or produced in this country. For this purpose, the anti-periodics should be administered at the proper time. If the fever is not too high, and especially if there is even a slight tendency to a decline, I would commence without delay with those measures

which I have so often directed for diseases having a similar attachment. If, shortly after the first dose, the fever did not show a tendency to decline, I would persevere no longer for that time. But if I should find the skin becoming moist after the first dose, and the fever partially passing off, I would repeat the doses every two hours until the fever had entirely subsided. The appropriate remedies for the removal of the fever *may* be administered without regard to the fever or the local inflammation; but, if the fever should only decline and afterward return, the remedy should be suspended, and palliatives resorted to.

Meantime, if the local pain in the left side is severe, the patient may often be relieved temporarily by the application of sinapisms to the side, followed by hot fomentations. In very severe cases, the application of one or two large cups to the side would give temporary relief, and perhaps effect a permanent cure. In such cases, I have occasionally applied large towels wrung out of cold water with excellent results. If there is considerable heat over the spleen, this application will be quite likely to relieve the sufferings of the patient.

But if the febrile symptoms are not removed by the local applications and the appropriate use of antiperiodics, you should suspend the latter as the exacerbation comes on, and resort to palliative measures. These are, frequent bathing of the whole surface, as often as every hour, with warm broke-water and whisky, followed by friction upon the skin; the administration, if the symptoms demand it, of mild cholagogue aperients—such as the taraxacum pill—and hot fomentations to the side affected. These measures will generally be followed by a more distinct remission, if not intermission, and then the antiperiodics will remove every vestige of the fever, and, in a majority of cases, carry off the local inflammatory difficulty.

It may sometimes happen that the local difficulty will not yield upon the subsidence of the fever, and then it will be proper to persevere with the local applications, and resort to more active and thorough general measures. Purgatives somewhat active may be necessary, unless contraindicated by gastro-intestinal irritation, which will not often be the case, though it might occur. The active purgatives will divert the inflammation from the spleen, and thus, with the local means, eradicate the difficulty.

It may be desirable, where a vestige of the disease lingers, to put the system upon an alterative course of treatment. Podophyl-

lin and leptandrin will communicate a healthy action to the glands of the bowels, and should be given once or twice a day, in doses of half a grain of the former and one grain of the latter. Cloths wrung out of cold water should be constantly applied at the same time, unless chilly sensations are produced, in which case hot fomentations may be substituted. Or if the symptoms are very urgent, scarify and apply cups over the left hypochondriac region.

I may remark here, that the antiperiodic remedies seem to exercise a peculiar influence in diseases of the spleen, more so than in other inflammatory diseases. You will rarely have to use any other means.

CHRONIC DISEASE OF THE SPLEEN.

We come now to consider the chronic form of this disease. And I would premise that I hardly consider it accurate to call it chronic *inflammation* of the spleen. At least I think I am justified by my own experience in preferring the term “chronic *disease* of the spleen.”

So multifarious are the conditions, developments and phenomena growing out of the size, shape, position, and morbid affections of the spleen that it is difficult to segregate the points most suitable for a lecture. In some cases we find this organ enlarged to an incredible extent. I have seen it occupying the whole anterior part of the abdomen, extending down into the right hypogastric and pubic regions. To what extent it pressed upon the bowels it is difficult to say. I once had a case in which the spleen had slipped over into the right side of the abdominal region and was a foot in length. The individual knew just when it passed over. With his assistance and my taxis, it was replaced, and, by the use of adhesive straps applied so as to tighten the abdominal parietes, and by the aid of his position for a few weeks, it was retained in its proper place. The patient entirely recovered.

Another case was that of a German girl about thirteen years of age, the lower part of whose abdomen presented an unnatural appearance. The peculiar character of some of these German families led me at first to suspect there had been some improper conduct. But from an examination and the history of the case, I was satisfied that the spleen had become dislocated and had fallen into the lower part of the abdomen. She was about her ordinary business, as usual, and as the symptoms were not very serious her friends concluded that they could not bear the expense of having

her treated. In this condition of affairs I left them. In about a week afterward, my partner, Dr. C——, was called in great haste. But they had taken the alarm too late. She died in a short time, and we were permitted to make a post-mortem examination. We found the spleen occupying the pelvic cavity and pressing on the bladder. From its peculiar position it had assumed a round shape and was as large as the head of a child, probably weighing four or five pounds. In other respects it appeared quite natural. It may be asked if this were not some other organ? There certainly was no other spleen, and as this had in every respect, save size and position, the character of the spleen I leave you to determine what it was.

The *most usual condition* of the spleen is *chronic enlargement*. This is a positive growth of the natural structure, retaining its original appearance. In treating this condition you need not expect any immediate result from the medicine, as you may in simple local engorgement. For it is sometimes years before this unnatural growth can be reduced, and the health of the patient restored. You will find in this condition general derangement of the system. The countenance has a pale, sallow and debilitated expression, with more or less general emaciation, though patients are generally able to attend to their ordinary avocations. Yet positive symptoms of disease will be apparent. The skin is dry, the pulse irregular, the urine scanty, and the appetite variable. The tongue presents a variety of appearances—sometimes coated and sometimes red, and the digestion, though in some rare cases unimpaired, is in a large majority of cases very much deranged.

The *causes* of this disease are similar to those of acute splenitis. It usually results from long continued action of malarial influence upon the system. The spleen becomes congested during the cold stage of fever, the excitement of the hot stage aggravates all the symptoms, and the repetition of these stages produces at last a permanent enlargement of the structure. It also sometimes succeeds or results from the acute form of splenitis.

The *morbid anatomy* of chronic affections of the spleen develops perhaps as great a variety of appearances and conditions as any other diseased organ of the human system. It varies, in size, from the slightest swelling to the most incredible enlargement, in color from an ashy paleness to a coal black hue; and in consistency from an almost fluid condition to the induration of any organic

structure. To detail every appearance would be to describe every case examined.

Prognosis.—With all the varied phenomena presented by the unique affections of the spleen, there are few diseases in which an unfavorable termination occurs more rarely than in this. Yet it would scarcely be expected, in cases of enormous enlargement, that any favorable change would take place in a short time. In fact I have known instances where but slight changes in the unnatural size or condition of the organ occurred for a number of years. And it is probable that, when it is positively enlarged by a kind of assimilative growth, it may continue so more or less during life. Yet by the appropriate treatment it is in most cases gradually diminished and ultimately restored completely, or, at least, to an extent compatible with apparent health and comfort. By the occurrence of an accidental displacement it becomes more liable to more active disease, and may, as in the case referred to, excite inflammatory action in contiguous and more vital organs, and speedily prove fatal.

Treatment.—I have already spoken of the mode of changing that unnatural position of the spleen which is occasionally met with, but I will again describe the process in few words. You must first place the patient in a proper position, then press moderately upon the abdomen, grasp the edge of the viscus, and move it to its natural position. It must then be retained by long adhesive straps, tightly applied to the abdominal parietes, and by a wide bandage round the abdomen. It will of course be necessary for the patient to keep quiet for some time, lying mostly on the left side.

In cases of long standing, you will generally find derangement in most of the functions of the abdominal organs associated with the spleen, and, if a radical course of treatment be contemplated, it will be indispensably necessary, in order to lay the foundation for a permanent cure, to stimulate those great emunctories of morbid elements to a more free and healthy action. If derangement of the stomach exists, indicated by a furred tongue and loss of appetite, it should be thoroughly evacuated by a free emetic. This should be repeated once in six or eight days for a few weeks, until the tongue clears off and a better relish for food is restored. The acetous tincture of sanguinaria and lobelia, given in tablespoonful doses and repeated every fifteen minutes, until the stomach is

thoroughly evacuated, will be found an efficient, and, at the same time, mild emetic. Its operation may be aided by an infusion of eupatorium freely taken.

When this is fully accomplished, the bowels should be freely evacuated, and freed from offensive accumulations and morbid secretions. For this purpose it is a matter of no small importance to select a remedy which will fulfill the indications with the least disturbance to the general system, and at the same time excite a more free and healthy secretory action of the important glands about the bowels. No article in this class of remedies can be relied on with greater confidence than our antibilious physic in the following prescription:

R. Comp. powder of Senna and Jalap,
Bitart. Potass, *aa* 3ss.
Podophyllin, gr. ss.
Water, f3j. S. Take all at once.

This should be repeated once in four hours until its full effects are realized. It may be necessary to repeat it once in two or three weeks during the course of treatment. Generally, however, after the first effective operation, it will only be necessary to keep up a gentle action of the bowels by such means as will produce a moderate impression on the liver and other abdominal glands by which morbid secretions are eliminated. This may be done, in cases of general debility, and especially where there is a dyspeptic state of the stomach without irritation, by the use of the compound tincture of tamarac, with the addition of a small portion of podophyllum.—The latter seems to have a specific action on the glands of the bowels. This mixture may be taken in half wineglassful doses three times a day. But where irritation of the stomach exists—which will readily be determined by the red appearance of the tongue and a small and excited pulse—the bitters will not be likely to be borne. The taraxacum and podophyllin pill, one given every night or every second night, or oftener if necessary, will answer the purpose desired. The evacuations will, in a day or two, become more bilious and healthy, and shortly after the use of this pill the skin will begin to clear up and have a more natural feeling.

In most chronic affections, the skin is found changed in color, and greatly deranged in function, and it is therefore a matter of the first importance to keep open this outlet of morbid excretions. This, as I have often said, should never be neglected in cases of chronic disease. The whole surface should be bathed once every

day, and followed with brisk friction. If the capillary circulation is particularly deficient, the warm stimulating alkali and whisky may be used. But when reaction readily takes place after bathing, the cold sponge-bath should be used every morning on rising from bed, or the shower-bath, if the patient can bear it, followed in every case by brisk friction until the capillary circulation is freely excited.

When the spleen is extremely enlarged, the application of an issue over the seat of disease affords an important means of diversion and counter-irritation, and at the same time furnishes an outlet for effete materials, usually in excess. If there be any objections to this measure, or if the case is not of sufficient importance to require it, the common irritating plaster applied to the side will answer. In those cases presenting a pale, sallow appearance, indicating an anæmic condition of the blood, the quinia and iron should be used daily for some time, in addition to the bitters before recommended, or if the bitters can not be borne, the wild-cherry bark in decoction affords a very good substitute. The muriated tincture of iron is also a reliable remedy in such cases. Moderate exercise in the open air, avoidance of night air and excessive fatigue, and a nourishing diet, will, if persevered in, be generally effective, and can be relied on in these chronic enlargements of the spleen.

LECTURE LX.

LOCAL DISEASES—CONTINUED.

Nephritis: Seldom Idiopathic; Different Structures involved; Associated organs affected. Acute Nephritis: Local Symptoms; Constitutional Disturbance; Changes in urinary Secretions; Urinary Calculi; Diagnosis; Of Gravel connected with Nephritis; Translation of Gout or Rheumatism; Neuralgia, etc.; Terminations; Anatomical Relations; Causes; Treatment under different Causes and Complications. Chronic Nephritis: Symptoms; Post-mortem; Treatment.

NEPHRITIS, OR INFLAMMATION OF THE KIDNEYS.

As an idiopathic affection, *inflammation* of the *kidneys* rarely occurs. Such at least has been the case in my practice. In fact, I have met with but few instances of active inflammatory disease of these organs, whether primary or secondary; though a low grade of inflammatory or irritative action, producing symptoms of functional derangement is by no means uncommon.

The inflammation, it is said by authors, may be located in the capsule of the kidney, in its parenchymatous structure, or in the mucous membrane lining its pelvis and calyces; and some have attempted to make certain varieties of the disease, according to the part involved. But it is scarcely conceivable that one of these structures would be inflamed alone; and it is very certain that no reliable diagnostic symptoms have been observed, by which such distinctions can be made during life; and, so far as treatment is concerned, very little would be gained if the diagnosis were perfectly clear. There will, it is true, be some differences between the renal secretion, where the disease is confined to the substance of the gland, and that secretion in case the mucous membrane is involved; but, as before remarked, instances rarely if ever occur where the renal parenchyma is inflamed without the lining membrane of its cavities being implicated.

Not only are all parts of the gland generally involved to some extent, in case of inflammation of the kidney, but the ureter, the bladder, the urethra, and even the testicles, generally become more

or less affected, from continuous sympathy, from the irritating character of the urine, or from nervous association. One kidney, however, may be inflamed, and the other remain perfectly healthy, in which case, the sound organ will, if the secretion of urine is suppressed in the other, take upon itself double duty, and thus supply the deficiency in the renal secretion from the system. This assumption of vicarious action by the kidney is not an isolated phenomenon in the system, but it occurs in accordance to what appears to be a general law of the animal economy. If a parotid gland is extirpated, there is no observable deficiency of saliva, and it is a known fact, that the ability of an arm to perform labor will be increased, by the extra effort made with it when its fellow is disabled. An organ will even sometimes, in a measure, take on a vicarious action, to supply a deficiency in the function of a very different organ; thus, the kidneys, in torpor of the liver, will eliminate large amounts of biliary elements from the system, and perhaps, *vice versa*. This is an admirable provision of nature.

The only practical division of this disease, is into the usual varieties of *acute* and *chronic*. We will first take up

ACUTE NEPHRITIS.

The *local symptoms* of acute nephritis are the following: *pain* in the lumbar region, either on one or both sides, very deep-seated, and increased by firm pressure, and by jars or sudden motions of the lumbar and abdominal muscles. The pain often extends from the loins down to the front and inside of the thighs, and is attended with a feeling of numbness in those parts. There is frequently pain in the scrotum with tenderness and retraction of the testicle. The quantity of *urine* is usually very much diminished, especially, if both kidneys are affected. Where this is the case, there is indeed sometimes a suppression, or at most a very scanty secretion, of urine; and then the poisonous influence of the *uræa* in the blood will be manifested by cerebral depression, amounting, in some cases, to complete coma. But not only by the quantity, but by the quality of the renal discharge are we enabled to learn something of the condition of the kidneys.

In many cases the urine is stained with blood, especially where the inflammation is caused by calculi in the kidneys; the particular symptoms, however, of calculous formations will be described hereafter. But whatever may be the cause of the inflammation, the urine is certain to acquire an acrid, irritating character, which

tends to extend the disease to the urinary passages and bladder. It sometimes deposits, on standing, coagulable mucus; though this is not diagnostic of renal disease, for it will be seen, also, where the mucous membrane of the bladder only is inflamed; but where there is an *albuminous* deposit, it must be referred to disease of the kidney itself. Owing to irritation of the neck of the bladder, there is usually a frequent inclination to urinate, and the effort is attended with more or less pain.

In connection with these local symptoms there is almost always a degree of *constitutional disturbance*. A slight chill sometimes even precedes the manifestation of local difficulty; but more generally the pain and other local symptoms first appear and are followed by febrile excitement introduced by a chill. The symptoms of this secondary fever are generally about as follows: Alternations of cold and flashes of heat, a yellow coat on the tongue, indicating derangement of the stomach, with more or less nausea. This symptom may be absent, but this is rarely the case. The nausea will be increased by much food or drink, and vomiting is not an uncommon occurrence. Where this takes place the contents of the stomach will first be thrown up, and this will often be followed by bilious vomiting. The liver is apt to be in an excitable condition, and the gastric disturbance is very likely to produce an unusual biliary secretion which is thus discharged. The *bowels* are usually constipated, and the *skin* dry and hot. It is not at all uncommon for the fever, in this disease, to present unequivocal signs of periodicity.

It may be proper, at this point, to present a brief explanation of those changes observed to take place in the *constituency of the urine*, as connected with renal inflammation. In a large majority of cases, in this country, there is a decided predominance of the earthy phosphates in this secretion, evincing what is denominated the *phosphatic diathesis*. This condition is characterized by the deposit of a whitish sediment; and does not of itself tend to the production of calculous formations. But when ammonia and magnesia are also present the formation of calculi is by no means uncommon in this diathesis.

In the *uric acid diathesis*, the acid predominates over the alkalis. Where this acid is largely in excess, it is very apt to be attended with the formation of irregular crystalline bodies either in the kidneys or bladder; but where it is partially neutralized by ammonia, it will be shown by a brickdust (*lateritious*) sediment in

the urine, on cooling. This is the condition of the system which results in the disease called *uric acid lithiasis*, or *gravel*. The concretions may, as just remarked, be formed within the calyces or pelvis of the kidneys, and, by acting as irritants, produce inflammation of those organs.

In the *oxalic* diathesis the predominating acid is, of course, the oxalic, and, when this combines with alkalies or earths, it forms the concretions termed oxalates. This condition is not apt to be evinced by spontaneous deposits in the urine, and *oxalic lithiasis* may come on and exist, producing the pain and inflammatory symptoms, without any apparent change in the nature of the urine. Hence we generally suspect this form of gravel, where we have the other symptoms of that disease without any deposit. The crystals of oxalate of lime, which is the substance principally composing the concretions in this case, are transparent, and do not therefore discolor the fluid, and are so small as to be invisible except under the microscope: but, when a nucleus is present, they tend to collect around it, and thus form—it may be in the kidney an irritating body, producing inflammation of the organ. Concretions of oxalate of lime have a reddish brown color, owing to the animal matter, and especially to the blood which enters into their composition, and they constitute what are denominated *mulberry calculi*.

This brief exposition of some of the phenomena connected with urinary calculous formations, seemed to be proper in this place, since the subject of gravel sometimes bears an intimate relation to the *cause* and *diagnosis* of nephritis.

Where inflammation of the kidney is caused by or associated with gravel, it will be distinguished by certain *diagnostic symptoms*. In addition to the constant pain and tenderness incident to the inflamed condition of the kidney, there will be experienced paroxysms of the most excruciating pain. This will occur during the spasmodic contractions of the ureters upon the calculus, tending, either to force it back into the pelvis of the kidney or forward into the bladder. Each paroxysm will continue, with brief remissions perhaps, until the gravel shall have entered the bladder. A period of comparative ease will succeed, and continue until another concretion is formed, which may be within two or three days, or after as many weeks. These paroxysms are called in common language, “fits of the gravel:” and where the calculus is of an irregular, angular shape, the urine will generally be more or less bloody. If

the stone is round and smooth, it will not produce such acute pain, but it will completely dam up the urine on that side during its presence in the ureter. So that the diagnostic symptoms of nephritis from this cause are, the paroxysms of acute spasmodic pain, bloody urine, and the presence in that fluid of the crystalline lithic formations, and renal retention of the urine, characterized by great fullness and pain in the lumbar region.

Nephritis is sometimes produced by a translation of the local manifestation of gout or rheumatism. This circumstance will generally be sufficient of itself to define the character of the affection; but if no evident translation has taken place, the constitutional habit of the patient, together with the high color of the urine and the copious deposit on cooling of uric acid, in the form of fine gravel, which is especially characteristic of the gouty diathesis, will be sufficiently diagnostic circumstances.

The diseases with which nephritis is most liable to be confounded are neuralgia, rheumatism in the lumbar region or lumbago, and inflammation of the psoas muscle; all of which affections are closely allied to each other. The diagnosis, however is not difficult in these cases. Neuralgic or rheumatic affections are seldom attended with the general febrile symptoms of acute nephritis, with gastric disturbance, with derangement and diminution of the urine, nor the frequent and painful micturition so common to this disease. The absence of pain in the scrotum, of tenderness and retraction of the testicle, and of pain and numbness in the inner side of the thigh, and the tendency of the pain to shift its locality—especially from one side to the other—will serve still further to distinguish these affections from renal inflammation. In disease of the psoas muscle, there is not so much difference in the permanency nor locality of the pain, which will often in this case be felt in the thigh, and sometimes even extend to the scrotum and testicle; but the urinary functions will remain undisturbed, and the stomach will not be affected; while the pain will be increased by contractions of this muscle—as inflexing the thigh—which is not the case in nephritis. In short, it may be remarked that mere muscular motion in the loins, which always causes pain in lumbago, or inflammation of the psoas, does not materially affect the kidneys, while a sudden jar or shock will produce much pain where there is inflammation of one or both of these glands.

I recollect reading an account of a medical gentleman who mistook the pain attendant on the passage of a calculus through the

urethra in his own person for eolic, and was treated accordingly. He obtained no permanent relief until the stone finally passed into the bladder. It was then discharged through the urethra, and proved to be a concretion of oxalate of lime. Generally, however, the location of the pain and the paroxysmal character of the intestinal spasms sufficiently characterize colic to prevent such a mistake.

Where the pain is produced by the passage of gravel, but without inflammation, as in nephralgia, the urinary symptoms will be similar to those of nephritis depending on this cause, and the pain will be nearly, perhaps quite, as severe, but there will be no fever, no gastric disturbance, and no tenderness of the kidneys under pressure.

The most frequent *termination* of inflammation of these organs is in *resolution*. When this is the case, there will be a gradual subsidence of all the symptoms, both general and local, and health will be established within a period varying from a day or two to as many weeks.

The result next in frequency, perhaps, is suppuration. This may take place, as in the liver and spleen, in different points; so that the abscess may point in any direction: it may burrow into the structures of the loins, and thus reach the skin, it may open into the peritoneal cavity, it is even said to have been discharged into the colon, but most commonly the matter is discharged into the pelvis of the kidney itself, passing off with the urine, and causing but little inconvenience. Where the abscess breaks externally, it may result in a fistulous opening communicating with the kidney, and discharging pus mixed with urine. When you find a tumor of this kind pointing to the surface, I would warn you, as in abscesses of the liver, not to be too hasty in opening it, or you may cause it to escape into the abdomen. The tumor should become very prominent before lancing, and if the pain is not too severe, it should be allowed to break spontaneously. It is even said that renal abscess has been known to take an upward direction, perforate the diaphragm, involve a portion of the pulmonary substance, and be at last discharged through the bronchiæ and the mouth.

Total *suppression* of urine sometimes results from nephritic inflammation. This is always followed by cerebral symptoms, such as coma, and perhaps convulsions, and is very seldom relieved. Where the suppression is less complete, a low form of irritative fever will follow, while the urine discharged will be dark colored,

with an offensive smell, and the case will sink into a typhus condition with little probability of recovery. *Gangrene* is not a frequent result of nephritis, though it occasionally occurs, and is of course fatal. The symptoms of this result are the sudden cessation of pain, and the evident approach of dissolution.

Acute nephritis may run into the chronic form, the symptoms of which will be given hereafter.

The *anatomical* relations of nephritis, though not very obscure, have not, perhaps, been as thoroughly and carefully studied as those of inflammation in some other localities where it more frequently occurs. Where death takes place in the early stage of this disease, whether caused directly by it or not, the cortical portion of the kidney usually exhibits a reddish dark color, and red dots may be observed throughout the glandular structure, with extravasated blood, perhaps, at various points. The gland is usually found to be considerably enlarged, sometimes enormously so. The mucous surface is congested, being reddened in color and generally more or less thickened. Where the disease has progressed further, pus is generally found in the kidneys—it may be in distinct sacs or disseminated through the tubulous structure, and sometimes filling the infundibula and pelvis, mixed with urine and sanguineous exudation.

In some instances the pelvis will exhibit the only evidence of disease, the parenchyma of the organ showing very slight, if any, traces of it. But where death has been produced by this disease, the structure of the kidney is always more or less altered, portions of the tubulous structure are sometimes indurated, but generally the renal texture is softened, and sometimes in a gangrenous condition, while coagulable lymph is found upon its surface and in surrounding structures.

When the inflammation has been the result of calculous obstruction in the ureters, or when these passages have been plugged up by fibrinous exudation, the cavity of the kidney is sometimes distended with urine variously mixed with pus, blood, and sometimes crystalline depositions.

Where chronic nephritis has existed, the kidney is always more or less changed in size and structure. It is sometimes enlarged, and where there has been dilation of its cavity, pouches of various size are frequently found, consisting of the mucous membrane and renal substance, strengthened perhaps by adhesion of surrounding parts. Generally, however, the gland is smaller than in health,

more or less indurated, and the surface roughened and granulated, or presenting a lobulated appearance. In cases of long standing, the changes wrought are of course greater than in those of more brief existence; and, where suppuration has been long in progress, the transformations are more marked than where the affection has passed into the chronic condition and been continued without suppuration. In the former case, indeed, the entire gland is sometimes destroyed, leaving a mere vestige of the former organ, consisting of a mass of soft disorganized matter containing small fibrous threads which are the remains of blood-vessels and uriferous tubes. In other cases ulcers are found in various stages of progress. Other changes, such as fistulous passages in various directions, consolidation of adjacent structure with the substance of the kidney, and the peculiar appearances common to chronic inflammation, which it is unnecessary further to specify, may attract observation.

The *causes* of nephritis are various and sometimes obscure. It is most frequently the result of mechanical injury, such as the irritation produced by urinary calculi in the pelvis, in one or more of the calyces, or in the ureter; wounds by penetrating instruments or gunshots; or bruises caused by falls or blows. Injuries, of the kind just mentioned, may be sufficient to produce the disease under any ordinary circumstances. In other words they may be both predisposing and exciting causes. Other circumstances may be mentioned which will be sufficient to excite renal inflammation, if there is an existing predisposition to the affection: such as hard horseback riding; or being severely jolted in a carriage on a rough road, similar to our Western "*corduroy*;" sudden exposure to atmospheric changes; the use of spirits turpentine and other irritating diuretics, etc.

Gouty and rheumatic affections are supposed occasionally to produce this disease, and it is said that the sudden retrocession of cutaneous eruptions have sometimes developed inflammation of the kidneys, and I have no doubt this may be the case where there is a predisposition to renal disease. Inflammation may also be propagated by continuous sympathy from the bladder and ureters to the kidneys. Nephritis is also not unfrequently attendant upon inflammatory disease in other organs, upon badly managed malarial fevers, and, it may be, upon typhoid fever also.

There can be no doubt that some persons are much more liable to this affection than others. This predisposition may be acquired

by the individual, or it may be derived by inheritance. It is more frequent in childhood than after puberty and during middle life; but old age is the period in which the strongest predisposition generally exists. A vast majority of patients with this disease are persons past the meridian of life.

The *treatment* of nephritis will, of course, depend very greatly on the cause, on the condition of the general system, and on the progress of the local disease. If the exciting cause is still operating to keep up the disease, it must, if practicable, be removed or counteracted. But, simultaneously with measures for this purpose, others may be employed to fulfill concurrent indications. If there is a loaded condition of the bowels, and especially of the colon, no measure will have a more salutary effect on the inflammatory action, than an efficient and thorough cathartic. There is, perhaps, no disease where the beneficial influence of the proper kind of purgatives is more manifest in practice, or more easily explained by philosophical principles, than in inflammation of the kidneys. They remove oppressive obstructions from the system, and exert both a depletory and revulsive influence.

Whatever the cause of the disease, then, inquiry should be made into the condition of the bowels, and if they are constipated, as is usually the case, a prompt cathartic should be administered at the outset. But prudence is requisite in the selection of a suitable agent for this purpose. In the active stage of the disease, and especially where the substance of the kidneys is involved, the exhibition of a cathartic, which possessed, also, active diuretic properties, would be highly injudicious; hence it would not be proper, under such circumstances, to give hydragogue medicine.—The combination of *podophyllin* and *leptandrin* is very applicable in this case. The *podophyllin* stimulates all the glands of and connected with the bowels, while the *leptandrin* promotes activity of the muscular coat, increasing the peristaltic motion, and the two together constitute the best purgative I have ever used in such cases. It actually fulfills more indications than any other agent, or combination of agents, of this class. If the bowels are obstinate the action of the purge may be aided by a copious injection of warm water or mucilage, which may serve the double purpose of a corroborant to the cathartic, and an emollient fomentation applied very near the local affection.

While this treatment is being applied, measures should be employed externally. If the inflammatory action is not very severe,

it may be sufficient to apply a sinapism over the region of the kidneys, to be followed by a hot fomentation of bitter herbs, or if more convenient a soft cataplasm of bread and milk, or, what is better, a hot onion poultice. Some special benefit might perhaps be expected from the soothing influence of the onions, and their specific diuretic tendency. But in severe cases, where no time can safely be lost, an extensive application of cups should be made immediately. This is a direct means of diverting local engorgement, and may be applied without difficulty in any case. If you have no cupping-glasses at hand, common tumblers will answer as well, or even better, being larger. Two or three should be applied over and around the parts, and immediately followed by a fomentation, or onion poultice. In addition to this, a hot fomentation to the abdomen will prove beneficial by its revulsive influence. These measures can all be employed while you are waiting for the operation of the cathartic.

Where the disease has been produced by *cold* or *exposure*, the foregoing treatment, accompanied and followed by diaphoretic measures, to the extent of producing and sustaining for some time a free *perspiration*, will generally be sufficient to relieve the case. As a medicine adapted to fulfill this last indication, and at the same time exert a soothing, anodyne influence on the system, the compound tincture of serpentaria is perhaps the best article you can employ. The compound powder of ipecacuanha and opium, might do in some cases, but it is objectionable because it contains the bitartrate of potassa, which is a stimulant diuretic. Another valuable article is the *althea officinalis*, which every physician should have growing in his garden or neighborhood. It is a soothing, mucilaginous diuretic, and I regard it as of great value in diseases of the urinary organs.

If the inflammation has been caused by the use of *spirits of turpentine* or any other *irritating diuretic*, its use must, of course, be suspended at once. Medicine of a soothing character will be required in this case, and the *althea officinalis* will be sufficient. In case, however, this can not be obtained, an infusion of mullein and flaxseed, or any other emollient, mucilaginous diuretic, may be employed. Such mild remedies, in addition to the measures already recommended for the reduction of inflammation in these organs, are the means to be relied upon where the disease results from this cause.

If it has been caused by mechanical injury, the use of cups, fomen-

tations and cataplasms, and such medicines as will keep the bowels in a soluble condition, will generally afford relief.

If it has been produced by urinary calculi, the measures already mentioned will be equally applicable. The compound tincture of serpentaria will be especially useful, for its anodyne and diaphoretic influence, and the use of diluent and mucilaginous drinks will greatly tend to soothe the irritation of the urinary mucous membrane. The bicarbonate of soda is of great service in this case, especially where there is the brickdust sediment in the urine, or where that fluid is highly charged with uric acid. This medicine should be given in doses of twenty-five or thirty grains, three or four times a day.

Where the disease is connected with a gouty or rheumatic condition of the system and especially where there appears to be a sudden translation of the irritation from any other place to the kidneys, the treatment will be the same as for the primary affection, if manifested elsewhere. Cups should be applied freely to the spinal column, followed by a sinapism, and *macrotin* should be given internally with a view to produce its specific impression on the system as evinced by slight headache and a sense of fullness in the head. It may be administered in a dose of one or two grains, every four hours until its effects are manifest. Of course the use of cathartics, and other measures advised before, will be important in this case also, according as the general and local symptoms may indicate them.

When the attack has been preceded by the retrocession of a cutaneous eruption, means should be employed to reproduce that eruption or substitute it. Sudorific treatment with a view of directing the circulation to the surface, will be highly proper, and in addition to this, croton oil should be applied to the skin over the location of the kidneys. The scarificator should first be employed, and the oil applied to the surface after the cups are removed. This will scarcely fail of producing a copious eruption in a few hours.

I have now given you an outline of the treatment to be pursued in the various cases of acute nephritis with which you will be likely to meet. Complications, such as malarial fever, hectic fever, and cerebral or nervous affections, must of course be managed according to the principles regulating the treatment of each.

If the inflammation does not yield at once under the measures I have recommended, they should be repeated the second day. The

indications are before you, and the medicines and measures for their fulfillment have been stated. Judgment and discrimination are, of course, requisite here, as in all other cases, that you may appreciate the condition of your patient, and vary your prescriptions accordingly; but the general rule is, having started right in your treatment, persevere until your object is accomplished.

As the symptoms decline, use more freely the mucilaginous diuretic drinks. The diet, which of course is very light during the active progress of the disease, must not be too soon exchanged for stimulating food. It should still be mild, and of the mucilaginous or farinaceous quality, until all symptoms of local irritation are removed, when a return to a more generous regimen may be gradually permitted.

CHRONIC NEPHRITIS.

Chronic inflammation of the kidneys often results from the imperfect subsidence of an acute attack. It occasionally occurs also as an original affection resulting, probably, from the irritating quality of the urine in some conditions of the system.

Symptoms.—But little febrile or other symptoms of constitutional disturbance usually attend this form of the disease, the symptoms being mostly of a merely local character, connected with the peculiar derangement of the urinary secretion. There is often a little tenderness, and usually a dull, heavy pain in the region of the kidneys. In severe and protracted cases the pulse is irritable, but usually small and debilitated. The urine is decidedly diminished in quantity and essentially deranged in quality, possessing an acrid and irritating character, as manifested by frequent calls for its evacuation. It may in some instances have a clear appearance when first discharged, but upon standing it deposits sediment varying in different cases. The sediment may consist chiefly of elements natural to the urine in health, but existing now in excess; or of substances resulting from inflammatory action or a state of great irritation. But generally the urine has a turbid appearance when first discharged. It is nearly always alkaline in its properties, as in the phosphatic diathesis, the deposits consisting for the most part of phosphate of lime, and phosphate of ammonia and magnesia. Ammonia often preponderates so much as to be recognized by the smell. Purulent matter is sometimes deposited, when the disease is located in the mucous membrane, or, having commenced in the substance of the kidney, has progressed so far

as to involve the mucous surface of the pelvis. In connection with this phenomenon symptoms of a hectic character often set in. The pulse becomes frequent, night-sweats occur, emaciation and great debility follow, and at length the patient sinks.

The *post-mortem* appearances were sufficiently described in connection with the acute form, and I refer you to what was there said.

The *treatment* of chronic nephritis should not, of course, be so actively antiphlogistic as in the acute form. Instead of thorough catharsis, designed to divert local determination, and deplete the system, your remedies must now be selected with a view to general alterative and restorative indications. Mild *aperients* should be administered if the bowels are costive, and for this purpose perhaps no remedy is better than the following pills :

- R. Trisnitrate of bismuth, ʒij.
 Socotrine aloes, ext. gentian, āā. ʒj.
 Colocynth, gamboge and castile soap, āā. gr. x.
 Oil of cloves, gtt. ij.
 Mix and form into thirty pills.
 S. Dose as an aperient—two.

It is mildly aperient, and gently tonic, and may be given so as to keep the bowels in a soluble condition.

Simple but efficient *diuretics* are indicated. As a remedy of this class, I have found the leaves or bark of the peach tree of much value in such cases. This is to be continued for days—perhaps weeks. There are vitiated matters in the system, highly antagonistic to health, which must be thrown off, and the kidneys must be stimulated to perform their natural functions with a view to this object. The interruption of this function by the local disease has caused an accumulation in the blood of those very elements which it is the office of the kidneys to eliminate, and the presence of which not only tends to keep up the renal disorder, but to vitiate all the secretions, depress the nervous system, and consequently destroy the constitution. In most cases, the restorative gin bitters (compound tincture of tamarac) will be an excellent prescription; for in it we have not only an efficient *diuretic*, but a stimulant to all the secretory organs and a very valuable tonic.

Other remedies have been found useful, which it may be well to mention. The *arbutus uva ursi* is a valuable diuretic, astringent and tonic, and admirably adapted to cases of debility and intestinal

relaxation, which are sometimes associated with chronic inflammation of the kidneys. The *rhocheilia virginiana* is diuretic, tonic, and mucilaginous; properties which admirably adapt it to many cases of this affection. It should be given in infusion, two or three times a day.

Where there is a very low grade of inflammatory action in the kidneys, or where slow, corroding ulcers are believed to exist, the *balsam of copaiva* is of great benefit. It may be combined with spirits of turpentine, but in this way it must be administered with great caution, for the combination may prove too stimulating, and produce irritation of the kidney and bladder. So that, although an excellent prescription where a stimulant diuretic is indicated, its effects are to be very carefully watched. I have employed the same agent with advantage in ulceration of the bowels. The *tincture of the muriate of iron*, also, is very useful in this disease where it can be borne. It acts as a stimulant diuretic, increases the red globules of the blood, and exerts a general tonic influence.

As soon as proper activity of the kidneys is produced, the stimulating diuretics should be suspended, and those of a mucilaginous character substituted. Here the marsh-mallows, or *althea officinalis*, will be adapted to the case. A decoction of mullein and flax-seed will also answer a good purpose. In short, any of our demulcent diuretics may be employed in infusion, the object being to soothe the urinary passages, and diminish the irritating properties of the urine by dilution.

Where the case is of some standing, it may be necessary to establish efficient and protracted counter-irritation. This may be done by inserting an *issue* in the region of the kidneys. The same thing may also be accomplished by the *irritating-plaster* (compound tar-plaster), provided the patient will submit to the inconvenience of wearing it.

In connection with the course of medication in this disease, *daily ablutions* are of the utmost importance, and should by no means be neglected. Let the entire skin be bathed with cold water, and then let brisk friction be applied until a genial glow of warmth is produced over the whole surface. The best time for this measure is, perhaps, the evening just before retiring to bed. It removes all accumulations from the skin, and tends to produce efficient functional activity in this extensive emunctory. In cases of debility, the cold *shower-bath* should be tried. If reaction comes up promptly upon the application of friction to the surface, after the effusion,

it will be of great service, otherwise it should not be continued. If a cold bath can not be borne, a *tepid* one should be substituted, and this may be employed in any manner which convenience may suggest; but it should be regularly and thoroughly administered, with precautions against exposure to cold, and always followed by friction as above.

Exercise in the open air should be taken every day, as far as the patient can bear it without much fatigue. This should never be omitted in the treatment of any chronic disease. The *diet* must be plain and digestible, but nutritious. In fact, success in such cases can be expected only from a course of treatment which, while it corrects local disorder, tends to renew the fluids and build up the solids of the system. Such a course has, in my opinion, been presented to you.

It may be well to remark, in this connection, that any symptoms of malarial influence, as evinced by periodical febrile symptoms, or neuralgic pains, will call for the prompt administration of the usual antiperiodic remedies.

LECTURE LXI.

LOCAL DISEASES—CONTINUED.

Cystitis: Acute form; Symptoms; Extension of the Inflammation; Febrile reaction; Post-mortem; Diagnosis; Prognosis; Causes; Treatment; Chronic form; Frequency; Symptoms; Prognosis; Post-mortem; Causes; Treatment.

CYSTITIS, OR INFLAMMATION OF THE BLADDER.

The bladder, like other organs, is subject to both *acute* and *chronic* inflammation. The two forms of the disease in this organ are sufficiently distinct to require a separate consideration.

ACUTE CYSTITIS.

In acute inflammation of the bladder, all parts of the organ may be involved at the same time, or the inflammation may be confined to a particular part. Thus the neck of the bladder alone may be affected, causing strangury; or the disease may be located at the entrance of the ureters, producing renal retention of the urine. It may also attack primarily one particular tissue of the bladder, as the mucous membrane, the muscular, or the partial peritoneal coat, but it is not probable that one of these structures is ever actively diseased very long without the others becoming involved. Except in peritonitis however, which has already been described, the mucous membrane is usually the principle seat of the inflammatory action in the early stage, and most of the symptoms to be described are dependent on disease of that membrane.

The *symptoms* of acute cystitis are generally distinct and urgent. It is not usually introduced by so active symptoms as inflammation in some other organs, such as chill, fever, etc., though these are sometimes the first symptoms. The disease is characterized by burning or smarting pain in the hypogastric region, in the pelvis, and in the perineum, which is increased by pressure, and greatly so by efforts to void urine. The calls for micturition are sometimes almost incessant, and attended with great pain; the urine passing off drop by drop. In severe cases it is sometimes impossible to evacuate the bladder, and the retention of urine

greatly distends the organ, causing intense suffering. The urine is not materially changed in character at first; it is perhaps somewhat scanty and high-colored, but not turbid when first discharged; though it deposits a sediment on standing.

The *disease is sometimes extended* along the entire urethra, and the glans penis may thus become very painfully affected. Indeed pain in the bladder is very apt to be referred to the glans, even when that organ is not diseased. Pain is also felt in the abdomen in some cases, and without some attention might be mistaken for colic or peritonitis. The rectum, from its contiguity to the cyst, often sympathizes with it, and it is not unusual for dysenteric symptoms, such as frequent calls to go to stool, with pain and tenesmus, to be manifested. Occasionally diarrhea supervenes, but generally constipation is the attendant condition of the bowels. The stomach, in severe cases, is very apt to be affected, and nausea and vomiting are sometimes exceedingly prostrating and obstinate symptoms. The kidneys are often sympathetically affected, and in that case, there are more manifest modifications of the urine. Its quantity is very sensibly reduced, becomes turbid from an excess of the phosphates, and sometimes contains coagulable albumen, evidently produced by irritation of the kidney. When the case is protracted, until suppuration in the bladder has occurred, the albuminous exudation from the kidneys may be mixed with pus and mucus from the bladder.

The *febrile reaction*, in different cases, is of various degrees of intensity, and it may precede the local symptoms, but generally is gradually developed as the case progresses. A general description will be sufficient. The pulse is usually small, frequent, sometimes irregular and greatly depressed. The tongue is coated, and, in severe and protracted cases, becomes dry and husky. Urgent thirst is a common symptom. The skin in ordinary cases is hot and dry, but in severe cases it often becomes cold on the extremities. As was before remarked, the bowels are usually costive, and sometimes the abdomen becomes tympanitic as in peritonitis.

As the disease progresses, involving the associated organs, interrupting the discharge and, perhaps, the secretion of urine, and producing general functional derangement and cerebral depression, a low, typhous condition comes on. The patient becomes dull, sleepy and stupid; the countenance becomes pale, sunken and cadaverous; delirium, coma, and perhaps convulsions successively appear, and the patient finally dies.

Where *post-mortem* examinations have been made, the usual signs of inflammation have been found, differing, of course, in accordance with the extent, intensity, and duration of the disease. The mucous membrane is injected, and thickened; and, in severe or protracted cases, either ulcerated or softened, and occasionally mortified.—Patches of greater or less extent are sometimes found, covered with a kind of membrane formed of concrete pus or albumen, and having the appearance of ulcers, though not really such. The deeper structures are generally involved. Ulcers in some cases are found to have penetrated the muscular coat, and abscesses of greater or less extent sometimes exist in the cellular structure.

The *diagnosis* is not difficult. Inflammation of the mucous membrane differs from that of the peritoneal covering, in the burning pain, obstruction and scalding sensation in the passage of urine, constant desire for micturition, and the presence of mucus in the urine, which characterize the former; while in the latter there is more pain and tenderness in the hypogastric region, difficulty or inability to expel the urine, which may, however, escape involuntarily as it accumulates. If there is tenesmus, it denotes that the base of the bladder is inflamed. Strangury, great pain on the use of a catheter, tenderness in the perineum, with little or none in the pubic region, indicate that the neck of the cyst is the principal seat of disease.

Prognosis.—In an ordinary case, the inflammation subsides in a short time, either spontaneously or under mild treatment; but where the attack is severe, with the active febrile and nervous symptoms I have described, the case will probably have a fatal issue in from one to two weeks, unless arrested by very prompt treatment.

A very few words will suffice upon the *causes* of acute cystitis.—The disease most frequently arises from mechanical injuries, as wounds, bruises, stone in the bladder, the use of the catheter in a careless manner, injury during parturition, etc. It is sometimes caused by irritating injections thrown into the bladder, by the action of unhealthy urine, and by irritating diuretics, as turpentine, cantharides, etc. Sudden exposure to cold, if there is predisposition, may produce it. It sometimes appears to result from metastasis of gout or rheumatism, and occasionally follows the retrocession of a cutaneous eruption. Cystitis may result also from sympathy of the bladder with other organs in a state of inflammation, as the uterus, rectum, kidneys, etc.

In the *treatment* of acute cystitis your measures should be efficient, and promptly applied.

The great suffering attendant on the disease presents, to the sympathizing physician, a strong motive for affording immediate relief, even if no danger attended the case. But there is often much mischief to be apprehended from allowing the inflammation to progress; not only in the local injuries resulting from the diseased action, but from the general disorder that is likely to be produced by the symptomatic fever, by retention of the urine, by interference with its secretion should the kidneys become implicated, etc. A very short delay, in some cases, is sufficient to place the disease beyond the reach of remedies.

The first point to be considered is the cause. If it has resulted from cold, the leading indications are to restore the circulation to an equilibrium and induce free perspiration. If it has been caused by the irritating qualities of the urine, the character of that secretion should be changed by mild, diluent, mucilaginous diuretics. But in most cases it will be important to evacuate the stomach and bowels in the commencement, which will prepare the way for, and increase the efficiency of other means. As a cathartic, the *compound powder of senna and jalap* combined with *cream of tartar*, should be administered, being quick and thorough in its operation, and exerting a powerful revulsive influence. Diaphoretics should not generally be given until the cathartic shall have operated sufficiently; but in the mean time, hot fomentations of bitter herbs should be applied over the hypogastrium and to the perineum. A better measure, still, is to seat the patient over a tub containing a hot decoction of bitter herbs, until a free perspiration is produced.

If the case is urgent, from the rapid progress of the disease, I would advise the application of cups to the perineum, to the hypogastrium and even to the sacrum. This should be followed immediately by hot fomentations.

After the operation of the cathartic, the patient should be put under the influence of the *compound powder of ipecac. and opium*, with a view of allaying the spasmodic irritability of the system, and promoting activity of the skin. A large *onion* poultice to the perineum and hypogastrium should be applied after the hot fomentations, and changed several times a day. If this is not convenient, a fomentation of *hops*, changed frequently, may be substituted. At the same time a tea of the *althea officinalis* should be freely used

with a view to its soothing, demulcent, diuretic influence. This is an agent which will usually be agreeable to the stomach, and should never be omitted. I know of nothing that would answer the purpose so well.

The course now directed, I venture to predict, will generally prove successful. If the symptoms do not yield at once, repeat such of the measures as appear to be indicated. If complications occur, they must be treated upon the principles involved in each case. For tenesmus, if urgent, mucilaginous injections with laudanum, should be administered.

If the attack has resulted from a translation of gout or rheumatism, measures should be employed in addition to those already advised, with reference to the original affection. Counter-irritation along the spinal column, by cups and sinapisms, will be proper in such a case. Where it follows the retrocession of a cutaneous eruption, an active vesicant, as the croton oil, should be applied to the perineum, hypogastrium and sacrum, for the purpose of imitating the cutaneous affection, and thus diverting the disease to the surface.

The diet must of course be of the mildest kind during the existence of inflammatory excitement. In the advanced stage, especially where suppuration is going on, and during convalescence, the food should be nourishing, and in case of necessity, the appetite may be promoted by the use of tonics, such as the *ptelea trifoliata*, *hydrastis canadensis*, and in some cases ale or porter.

CHRONIC CYSTITIS, CHRONIC MUCOUS INFLAMMATION OF THE BLADDER, CYSTITIS, OR CATARRH OF THE BLADDER.

This form of cystitis is perhaps more frequent in occurrence than the acute; it has certainly proved to be so in my experience. It is characterized much more by *local* than by *general symptoms*, and the character of the urine, and the pain attendant on its discharge, are the chief diagnostic phenomena of the affection.

The urine is more likely to contain mucus in this than in the acute form of the disease, and the quantity of that substance discharged with the urine, in protracted cases, is sometimes very great, amounting, it is said, to several pints daily. The mucus may not, in recent cases, be sufficient to change the appearance of the urine as discharged, but it will separate in some measure on cooling. As the disease progresses, the mucous discharge increases, and the urine becomes quite turbid, but when allowed to stand,

the mucus will subside and leave the urine clear. In advanced cases, *pus* is not unfrequently mixed with the mucus, and in some cases, a small quantity of blood will occasionally terminate the discharge, being forced from the irritated mucous surface by the contraction of the detrusor muscle.

A very common symptom is a frequent inclination to urinate, and difficulty in retaining the urine in the bladder, owing to the stimulating influence of the urine upon the irritated mucous membrane. Where the kidneys are not affected, the usual quantity of urine will be secreted, and the irritated condition of the cyst renders its presence very painful; and hence there is a desire to void it as fast as received from the ureters. Where there is less morbid sensibility the calls for micturition will be less frequent, yet more so than in health; and each effort of the kind is accompanied by a burning pain in the urethra and a spasmodic contraction of the bladder.

There is generally constant uneasiness in the region of the bladder, a sense of heat, and usually of debility; often a feeling of weight in the perineum, with weakness in the loins, and irritation of the rectum. In the female the uterus and vagina will be affected more or less, as evinced by a leucorrhœal discharge.

Where the disease has the chronic form from the beginning, which is by no means uncommon, there is, in its early course, but little constitutional disturbance. Usually there is slight fever, as indicated by some excitement of the pulse, a slight fur on the tongue, and dryness and perhaps heat of the skin. But if the local difficulty advances and the surrounding organs sympathize, the renal and other secretions become impaired; the general health is undermined; general debility and emaciation are produced; and the patient may sink into a nervous, hectic condition, from which death alone can relieve him.

But, although death may be the consequence of chronic cystitis, as just described, yet the general *prognosis* is not unfavorable. The usual tendency of the affection is to yield to appropriate treatment, if applied before irreparable organic or constitutional injury has been inflicted. Strong predisposition to disease of the bladder renders the cure more difficult, and less permanent, and some cases, having little tendency to impair the general health, have been known to continue for years, giving the patient constant distress. Considerable structural lesion of the bladder may occur and the disease be arrested at last. The discharge of *pus* with the urine

must of course weaken the favorable prognosis, but is by no means inconsistent with final recovery. Gangrene however is necessarily fatal.

The *post-mortem appearances* are such as would reasonably be anticipated upon observation of the symptoms. Death is caused by this disease only after long-continued lesion, and of course anatomical changes might be expected, in accordance with the duration and activity of the local affection. The mucous membrane may exhibit patches of a dark red or livid color; it may be softened, ulcerated, or disorganized to a greater or less extent. It is often thrown into folds or rugæ, in consequence of permanent contraction of the muscular coat, and if calculi are present, they may be found in a sac or furrow formed by the mucous membrane. Of course the surrounding structures and associated organs will indicate the extent to which they have been involved in the organic lesion.

Causes.—Chronic cystitis often succeeds the acute disease, and may therefore result from the same causes. Those causes may even produce the chronic affection without an acute attack, where their operation is milder, or the constitution less predisposed to active inflammation. It is however, the result in most cases of a predisposition, either inherited, or brought on by disease or improper habits. Thus either the scrofulous, gouty, or rheumatic diathesis may be a predisposing cause. The long-continued habit of using alcoholic liquors, or of indulging in excessive eating, and in the use of high-seasoned food together with sedentary and indolent habits of life, may produce the predisposition. It may be produced by a diseased condition of the kidneys, or it may result from disease in the urethra, prostate, female organs of generation, or the rectum. Excessive venery may be both a predisposing and exciting cause.

In the *treatment* two main objects are to be had in view. The first is the removal and prevention of all irritating influences which may keep up the difficulty; the second to prompt and assist nature to produce healthy action. It will, therefore, be necessary to modify the irritating properties of the urine, remove accumulations from the bowels, draw off the water from the bladder if necessary, and as far as possible procure and preserve a calm condition of the whole system. The patient must of course avoid exposure to cold, excessive fatigue, and all other causes calculated to produce local determination.

The measures to be employed will be both general and local. As general remedies, such agents may be used as have a direct tendency to affect the urinary organs in a favorable manner, and others also, which, while they have no specific relation to those organs, may ameliorate the condition of others, and of the general system, and thus assist in the cure. But the treatment will have to be moderate in its character, and patiently protracted until a gradual recovery is brought about. It is vain to make as much effort to hasten the favorable result as may be done in acute disease; your management must rather be of the expectant character. It will be found necessary also in a course of treatment for this, as well as other chronic affections, to alternate the remedies occasionally; for when a particular agent is employed for some time the system becomes inured to it, and then little benefit is derived from its use.

Among the remedies which have been employed in chronic inflammation of the bladder, *buchu* or *diosma* has acquired a favorable reputation. I have used it with very good effects in many cases. *Uva ursi*, given in small doses, exerts a favorable diuretic influence combined with its tonic and astringent effects, and is highly useful in cases of debility and relaxation. The demulcent diuretics also are always indicated, and may be combined with the foregoing or alternated with them. One of the best of these is the marsh mallows (*althea officinalis*) of which I have so frequently spoken. An infusion of *mullein* and *flax-seed* will also answer a good purpose. The infusion of the leaves or bark of the *peach* tree, given freely, is decidedly diuretic, sensibly tonic and believed to act sometimes as a mild aperient, and I have often found much benefit from its use in these cases.

If the patient is dyspeptic and debilitated, mild tonics and aperients should be given. Perhaps no prescription will more fully meet the indications of the case, under such circumstances, than the *gin bitters* (compound tincture of tamarac). Even the stimulating effects of the gin will not be objectionable in these slow forms of chronic inflammation. We often see old ulcers on the surface induced to heal by the application of active stimulants, and I can readily conceive how a stimulant taken into the system may exert a beneficial influence on a tardy local disease of this character. Such, at least, I have often found to be the effect of using these bitters. The use of this or other stimulants must not, however, be too long continued, for though they may act

favorably for a while, if their full influence is continued it may prove injurious by exciting acute inflammation.

Local measures are also of much importance in the treatment of chronic cystitis. Counter-irritation should be made in the perineum and over the pubes. Where the neck of the bladder is the seat of disease, an irritating application to the perineum will be of special service. This may be effected by producing an issue with caustic potash, from which a constant discharge may be kept up. The same may be done above the pubes, or the compound tar-plaster may be applied there. This, if preferred to an issue, may also be applied in the perineum, or near it, on the inner side of the thighs. Much good may sometimes be accomplished by the judicious employment of injections thrown into the bladder. The decoction of marsh mallows, or of flaxseed, barley water, or other mucilaginous, soothing fluids, may be carefully injected into the bladder through a common catheter by means of a small syringe. The infusion of *hydrastis canadensis* or *yellow puccoon*, which seems to exert a beneficial influence upon all irritated mucous surfaces, has been injected into the bladder with manifest advantage. It may become necessary, after using these mild injections, to employ one of more positive character, especially if there is reason to believe that ulcers exist in the cyst. A solution of nitrate of silver, say four or six grains to the fluid-ounce of rain-water, may be thrown into the bladder once a day, or every second day, and allowed to remain a minute or two. Just before using this, the bladder should be washed out with warm rain-water. The strength of the injection may be gradually increased as the patient appears able to bear it without much pain. If too much stimulation should follow its use, return for a time to the mucilaginous injections.

Where there is a gouty or rheumatic condition, the treatment should be directed to its removal. Counter-irritation along the spine, and general alterative treatment should be employed. Alteratives will also be necessary where there is a serofulous diathesis, and where there is a venereal taint in the constitution. The *wine of colchicum*, for gout or rheumatism, has acquired some reputation. As a common alterative, compound sirup of sarsaparilla, or the compound sirup of stillingia, of the American Eclectic Dispensatory, may be used. The iodide of potassium may be added to either of these sirups for the serofulous and syphilitic condition.

The *diet* should be nutritious but simple, consisting principally

of mucilaginous and farinaceous food, with small quantities of boiled or rare-cooked animal food, where there is not much inflammatory excitement.

[For chronic cystitis with copious mucous or purulent discharges, the chloride of zinc is an excellent remedy. A teaspoonful of the saturated solution may be added to two fluid-ounces of an infusion of hydrastis and injected into the bladder once a day. If not discharged by the action of the bladder within fifteen or twenty minutes after being introduced, it should be drawn off by the catheter. Where the urine is bloody, an astringent, as geranium, may be added to the injection. S.]

LECTURE LXII.

LOCAL DISEASES—CONTINUED.

Bright's Disease of the Kidneys; Synonyms; Acute and Chronic Forms; Nature of the Local Difficulty; Symptoms, General and Diagnostic; Post-Mortem; Causes; Prognosis; Treatment.

BRIGHT'S DISEASE, ALBUMINURIA, OR ALBUMINOUS NEPHRITIS.

The title, BRIGHT'S DISEASE, by which the renal affection next to be considered, is now generally known, is attached to it in honor of Dr. Bright, of London, who first described it with some degree of distinctness in 1827. It has since been the subject of considerable research both in Europe and this country, and other names have been proposed for the malady, expressive of the peculiar views of its nature or characteristic phenomena, entertained by the authors proposing them. *Albuminuria*, as denoting the presence of albumen in the urine; *albuminous nephritis*, intimating that it is an inflammatory condition of the kidney distinguished by albuminous urine; and *granular degeneration of the kidneys*, expressive of the morbid condition to which the organs are reduced by the disease—have all been employed, and may be regarded as synonyms of the term *Bright's disease*, by which I shall generally designate the disorder. The nature of the affection is confessedly a matter of doubt and obscurity among authors, and hence no term significant of its pathological character should be employed, until that character shall have been settled.

From my own observations and experience in this form of renal disease, as well as from the points of agreement in regard to its character found in the authorities which have fallen within my range of reading, I am well convinced that the most important point connected with the disease has been entirely overlooked, but more of this presently.

This disease is said to be presented in the two forms, *acute* and *chronic*; but not only is the line of division between the two, altogether indefinite, but the leading characteristics of the disease are so nearly identical, in the two cases, that the distinction can not be of

any advantage. The febrile excitement attendant upon the acute form, so called, does not appear to depend upon any greater activity in the local disease, but upon the greater degree in which the general system sympathizes with the diseased organ. Exacerbations of this acute character occur even in protracted chronic cases, when any thing occurs to increase the general sensibility. Or inflammatory symptoms may be superinduced upon those of Bright's disease proper, and thus give it the appearance of an acute attack. In short, I am perfectly satisfied that the only difference between the symptoms observable in different cases, may always be referred to the stage of the disease, to peculiarity in the constitution of the patient, or to some associated affection. I have seen equal variety of general symptoms in cases of membranous croup, where there is never any acute local disease; and I believe the last-mentioned disease and the one we are now considering, both depend upon a peculiar mode of local irritation, short of inflammation. Inflammatory symptoms occasionally accompany these forms of disease, and some of the authorities regard them as essentially inflammatory in their nature; but I have found so large a proportion of cases, both in Bright's disease and in membranous croup, lacking in all symptoms of febrile excitement, that I must consider the cases in which such excitement is present, as exceptions to the general rule, and the reaction as attributable to some cause besides the local irritation, in either case.

The *peculiar symptom* of Bright's disease is admitted to consist in the albuminous effusion found in the urine, with a few general symptoms necessarily resulting from the condition of the organs thus affected. Dr. Wood says: "Should the urine be scanty, highly albuminous, and little reduced in specific gravity, and should the patient be at the same time febrile it may be taken for granted that he is laboring under an acute attack, or is in the early stage of Bright's disease. When the urine, whether scanty or otherwise, is moderately albuminous, or though free from albumen at times, is generally contaminated with it, and when, at the same time, its specific gravity is considerable and steadily diminished, there can be little doubt of the existence of the disease in the chronic form."

The only marked difference according to Dr. W.'s diagnosis, between the acute and chronic forms, consists in the "febrile" condition in the former, which is absent in the latter, and the leading or essential symptom in both is the albuminous urine, with the

attendant diminution of the specific gravity of that fluid below the standard of health. Taking Dr. W.'s description then as correct it is a sufficient confirmation of the statement just made in regard to the peculiar characteristics of this affection.

The only question then that remains to be considered, is this: What is the *nature of the local difficulty* in the kidneys, of which this albuminous urine is the prominent symptom? Is it inflammation, either acute or chronic? In answer to this question, I reply that this symptom is not associated with inflammation of the kidneys ordinarily, nor indeed with any other affection of those organs, as a usual symptom, except the one before us. So that, if this is an inflammatory affection, it differs in a remarkable circumstance from that form of disease as it usually occurs. This fact is indeed noticed by Dr. Wood, for he says, "the difference between this and the ordinary inflammation of the kidneys appears to be,"—not only "*appears to be*" but *is*, he should have said,—"that, in the peculiar constitution attending Bright's disease, the vessels throw out the yellowish matter characteristic of that complaint, instead of serum, coagulable lymph, and pus." But not only do the symptoms of ordinary acute and chronic inflammation thus essentially differ from Bright's disease, but the anatomical characters of the two morbid conditions are equally diverse. Inflammation either wastes the substance of the kidney by suppuration or ulceration, or indurates it by the ordinary process of adhesion; but in Bright's disease the renal substance is absorbed to make room for a yellowish granular deposit; which may afterward be itself absorbed, leaving the organ almost obliterated.

The opinion, to which I have been led by my own observations of the disease itself, and my reflections on the leading points presented by different authors, is, that Bright's disease consists in a grade of irritation of the renal substance, not amounting to inflammation, but sufficient to derange and partially suspend the proper function of the kidneys, and produce a gradual alteration of their structure. The albuminous matter found in the urine, is in my view, a mere effusion caused by irritation, washed off from the mucous surface and brought away by the urine, but forming no part of that fluid as secreted. The inorganic granular substances, which post-mortem examinations show to be characteristic results of this disease, consist, I have no doubt, of inspissated albumen, which, not being washed away by the urine, accumulates in the malpighian bodies, distending them, and thus, by pressure upon

the surrounding capillary plexure of blood-vessels, producing passive congestion. This pressure being continued and increased as the effusion enlarges the granular deposit, the cortical structure of the kidney is absorbed, and all the tissues are under constant pressure, and in this way, doubtless, the degeneration of the gland is effected.

These views are rendered probable, and indeed satisfactory to my mind, from various considerations:

First, From the fact, that nearly all authors agree that Bright's disease is not an inflammatory one, as it neither develops the symptoms of inflammation during its progress, nor exhibits the pathological results of inflammatory action, upon dissection.

Secondly, The anatomical appearances do indicate morbid action closely allied to inflammation, but not identical with it; not, indeed, passing the boundary of a low grade of irritation, and probably preceded or associated with a condition of the system favorable to its development and continuance. The results of this morbid action are, it is admitted, the destruction, finally, of the structure involved, and the production of a new substance in its place, yet this new epigenetic formation has not the character of organized tissue, and therefore lacks the principle of vitality. It is not therefore a growth such as results from adhesive inflammation, but must be referred to another formative process, that of mere aggregation.

Thirdly, The albuminous matter found in the urine is not one of the elements of that fluid in health; unless it can be found in the very small amount of animal matter which the urine contains. But, as I said on a former occasion, I do not remember an instance where it has ever been shown that a secreting surface, in a state of disease, produced a secretion composed of elements differing entirely from those found in the natural product of the organ in health. I therefore conclude that the albumen which constitutes the main *characteristic* of this disease, is not a product of urinary secretion, but of an exosmose, resulting from the relaxed state of the diseased tissues. Whether the albumen discharged with the urine is derived from the fibrin in the blood—as albumen in some conditions of the system is converted into fibrin—or whether it is an epigenesis from other elements can not be readily determined. It is certain, however, that the fibrin of the blood is constantly diminished during the progress of this disease; and that the serum is increased far beyond its normal proportion. The consequence

is, an effusion of serum into the cellular tissue, constituting a kind of inflammatory dropsy. There is, furthermore, strong reason to believe, that an excess of albumen exists in the blood of persons strongly predisposed to this affection. In scarlatina, for instance, albumen certainly forms more than its due proportion of the blood; and that disorder leaves the system predisposed for a time to Bright's disease. It is worthy of note, also, in this connection, that membranous croup often follows scarlet fever.

Fourthly, The slow and almost imperceptible approach of this disease, usually, and the very gradual manner in which the changes in the condition of the urine and the blood take place, confirm the opinion I have expressed, that the character of this morbid action is that of a low grade of irritation. The reason why similar results do not follow irritation in other organs, may be found in the fact, that no other organ possesses the peculiar organization of the renal glands.

These are the main points which sustain my theory of Bright's disease, and all the *facts* recorded in the books in regard to it, when isolated from the theories stated in connection with them, strongly confirm my mind in the views which personal observation and experience have suggested.

For the purpose of enabling you more perfectly to comprehend this disease in its different phases, I will now describe the leading symptoms connected with it in its progress, and the condition of the diseased organ as developed by post-mortem observations.

Symptoms. — As was stated in the outset, no advantage can be gained by considering Bright's disease as occurring in two forms; acute and chronic. Dr. Wood, who recognizes the acute form, says, while speaking of the chronic: "though occasionally preceded by the acute form, this has much more frequently its characteristic grade from the commencement." This is undoubtedly the fact; and whatever symptoms of local inflammation and of general excitement may occasionally occur, either in the commencement, or at any period of its progress, they do not in my opinion constitute features of this disease. They are merely symptoms of associated local disease, or of a peculiarly irritable condition of the system. I shall not therefore describe two forms of Bright's disease.

The early symptoms of this affection, where it occurs unconnected with some acute disease, are intangible and obscure. The patient may not have observed any evidences of indisposition until his attention is arrested by an edematous swelling of the face, or

some other portion of the system. But when this or some other circumstance leads him to consult a physician, the interrogatories of the latter will bring to his memory a train of symptoms which, having appeared very trivial, had scarcely attracted his notice. He now remembers, perhaps, that he has experienced for some time a vague uneasiness and sense of weakness in the loins, on one or both sides, and, it may be, that the urinary secretion has been somewhat diminished, and that it has sometimes appeared to be somewhat turbid. Upon examining further, you find, probably, some tenderness under firm pressure over the kidneys. The urine, when allowed to stand a short time, presents a substance of darker color and more consistent than the fluid itself, floating within it, and sometimes a thin, slightly oily pellicle in the surface. The edematous appearance continues to spread and increase, while the urine becomes gradually diminished in quantity, and also in specific gravity.

With these evidences of local disorder, you may soon observe those that indicate some degree of general derangement. Indeed, the edema already mentioned is a symptom of this character, but others shortly follow, such as dry skin, more or less thirst, inactivity of the bowels, a moderate excitement of the pulse, and a feeling of general debility and disease. Associated with the symptoms just enumerated will be frequent nausea and sometimes vomiting, with more or less drowsiness. The appearance of the patient is that of general disease; the skin is pale and anemic, and the face and surface generally presents a bloated aspect. This anemic, dropsical condition, and the albumen in the urine, taken together constitute the most unequivocal evidences of the disease. Along with this bloodless appearance of the patient, a general relaxation of the tissues exists, as evinced by the soft, flabby state of the muscles, and by general emaciation, showing a want of healthy assimilation, as well as a degeneration of the vital forces.

The febrile symptoms that are so often found associated with this disease, are referable, as has been said, to some local inflammation, either in the kidneys or other organs, and is produced, no doubt by the predominance in the blood of those elements which circulate with great difficulty in the capillary vessels, and which consequently, as shown by universal observation, tend to produce local engorgement.

The diminution of the urinary secretion usually keeps pace with

the local disorganization going on in the renal substance, so that, as the disease advances, this secretion becomes more and more scanty until a total suppression occurs; thus leaving in the circulating fluid a large amount of morbid, excrementitious matter, some elements of which are positively poisonous to the nervous system. These are probably the main influences concerned in producing the comatose condition which is apt to ensue upon the arrest of the urinary secretion. Effusion into the ventricles of the brain would have a similar effect, and as post-mortem examinations show this to have taken place sometimes, there can be but little doubt that where it occurs it has something to do in developing the cerebral symptoms.

From what has already been said, you will have little if any difficulty in appreciating the variously modified symptoms which may occur in different constitutions, and in tracing in your imagination the progress of a case to its final result. I shall therefore dismiss the consideration of the symptoms and course of the malady during life, and briefly call your attention to the developments of its pathological anatomy.

In describing the *post-mortem* appearances, I shall not dwell upon the associated morbid conditions of other organs, such as the liver, stomach, lungs, heart, brain, etc., one or more of which may have become accidentally involved, or have been predisposed to sympathize with the diseased kidneys. But whatever may have been the cause or extent of disease in any of these organs, the autopsy will present such phenomena as might be expected from such an affection of the organ involved. They are not post-mortem symptoms of Bright's disease, though they may have resulted from other local affections produced by it. We may therefore confine our attention to the morbid remains of the disease as presented in the organs believed to be the special seat of the primary difficulty.

Where death has resulted from any cause during the early stages of this affection, the kidney is in a state of congestion and great relaxation; in some instances being increased in weight and volume to several times its natural size. This increase is principally owing to the vascular engorgement which is apparent in the vessels ramifying throughout its structures. Even slight ecchymosis is often seen in spots on the inner surface. The cortical portion however, appears to be the seat of the greatest morbid action, as it often exhibits two or three times its ordinary thick-

ness. Along with these evidences of sanguineous engorgement, may be observed a granular matter deposited through the substance of the kidney; and this appears to increase as the disease advances. This new product is shown to be an unorganised deposit, as the finest injections have not been made to enter it. It must therefore be regarded as a mere exudation and not a secretion.

The appearance of the kidney however, in different cases of this disease, is by no means uniform. It is sometimes but slightly enlarged or not at all; sometimes indeed greatly diminished in size, with but little left of its original character. In some instances the whole cortical structure has changed from a reddish-brown, its natural color, to yellowish, while the tubular portion retains its healthy condition; thus presenting a very striking contrast between the states of the two structures.

This granular matter is sometimes deposited in small particles throughout the cortical portion, while the intervening substance is engorged with blood. In other cases, however, the granular substance is found deposited in homogeneous masses to such an extent as to occupy the entire place of the renal structure. Again, in the more protracted cases, after the structure of the kidney has been removed by absorption, under the influence of the pressure of the deposit, leaving the latter to occupy its place, the absorbents of surrounding tissues act upon this deposit, until the greater part is disposed of, and little of the kidney is left except its capsule and membranous tissue.

Causes.—From what has been said, it will be readily inferred that the predisposing causes of this disease are to be sought for in influences calculated to produce a vitiated state of the blood; and the concurrent observations of nearly all who have written on the subject refer to a peculiar condition of the circulating fluid as necessary to its development. Hence the disease is usually found in systems which have been exhausted and contaminated by debauchery and intemperance, or greatly debilitated by severe or protracted disease, and in whose blood there is a deficiency of the more vital elements, and a superabundance of the serous and albuminous portions.

It has been observed in a few instances associated with tuberculous affections, and it is thought by some that the scrofulous habit is really a predisposition to Bright's disease. This is rendered

probable by the well known condition of the blood in such constitutions; still it would require some immediately exciting cause, capable of determining the irritative action to the kidneys to develop this particular form of disease. It has also been recognized frequently in dropsical affections which so often follow scarlet fever. In this case, too, the condition of the blood is usually highly favorable to the production of the disease we are considering. The influence of mercury on the system has also been mentioned as a predisposing cause. But whatever may have been the causes which have produced this predisposition in the condition of the blood, the actual development of the renal affection requires some exciting cause capable of producing irritation in the kidneys. Such cases are numerous. Exposure to cold, by checking the activity of the skin, and thus throwing extra labor upon the urinary function may be sufficient to produce the disease, where there is predisposition to it. The use of spirits of turpentine or cantharides, whether taken internally or applied externally, might have the same effect by its irritant diuretic influence. The rather unfrequent occurrence of the malady, especially since the attention of the profession has been particularly directed to it, is a reason for the comparative obscurity which still envelops the cause of Bright's disease.

The *prognosis* in this affection is regarded by authors as generally unfavorable; and my limited experience in this disease will not, of course, enable me to speak with very great certainty. Yet the few cases which have come under my observation, and in which I have had an opportunity to watch the effect of medicine, and thus study more thoroughly the nature of this disease, have impressed my mind with a more hopeful prognostication than seems to be authorized in the books. It was by these personal observations also, that those peculiar views of the character of the morbid action were suggested to my mind, which I have endeavored to elucidate in this lecture. Two out of every three cases, which it has been my lot to treat, have terminated favorably; and I merely remark that if this forms any criterion on which to base an opinion as to the curability of Bright's disease, the more favorable prognosis which I have suggested has that sanction.

In the *treatment* of Bright's disease you should be governed by those general principles which I have been endeavoring to impress upon your minds in relation to the philosophy of the morbid condition. Hence two leading indications present themselves as dis-

tinct and prominent in the case: First, to restore the blood to a healthy condition; secondly to relieve the local irritation.

Fortunately in the measures calculated to fulfill these two indications, there exists no incompatibility forbidding their simultaneous exhibition. Even such local measures as good sense and experience alike recommend as well adapted to subdue the local irritation, will, at the same time, exert more or less influence in removing from the blood those elements capable of producing and keeping up the disease.

The application of *cups* with *scarification* over the seat of the disease is a very efficient means of subduing the local irritation. For the purpose of making a decided impression on the disease in the early stage, the cups should be thoroughly applied, and repeated once or twice a week, for a short time; and followed by a towel wet in cold water. This should be changed once in four or five hours so as to keep up a constant evaporation. When the symptoms of more active irritation have been subdued, under these local means, and those of a general character to be mentioned presently, the application of an issue over the seat of the disease will be found a most important measure in the radical treatment. While it acts as a drain to the morbid materials existing in the blood-vessels, it has a no less important revulsive influence upon the local irritation. A remedy so readily applied, so easily borne by the patient, and withal so important in its influence over the disease to which it is applicable, ought not to be overlooked. It may be produced by the application of caustic potash, with little suffering, and when made can be continued with slight pain or inconvenience to the patient.

The *constitutional* measures to be used from the commencement of the treatment, are such as shall change the condition of the blood, and give tone and action to the system in general. As a remedy adapted to promote this object, the tincture of muriate of iron, given in the form of a chalybeate *water*, made by mixing the tincture with a solution of the carbonate of soda, will be found highly valuable. Or it may be given with equally good effect, perhaps, in simple water, in doses of fifteen or twenty drops twice a day. The experience of the profession generally, concurs in awarding to the chalybeates the property of increasing the red globules of the blood, and thereby fulfilling an important indication in all cases of an anæmic condition. I have never found an

aggravation of those symptoms, looked upon by the profession as semi-inflammatory, under the administration of this agent, or others of a similar character; but, on the contrary, it has always proved one of the most efficient means in promoting a speedy and permanent cure.

If the local disease has associated with it symptoms of periodic exacerbations, the sulphate of quinia and prussiate of iron, so often recommended in other diseases, will form an indispensable part of the treatment. These should be given to the extent of producing their specific effect before they should be discontinued.

If time were important in the case, they might be administered at any stage, but the remission, which usually occurs in the morning, is the period to be preferred for their administration. They need not supersede the other remedies which have been or will be recommended.

Among the most important agents in the cure of Bright's disease, which I have employed, is a pill composed of alcoholic extract of sambucus (*elder bark*), extract of taraxacum (*dandelion root*) and the leptandrin powder; form into a pill of common size, and administer two, three times a day. These pills should be given in sufficient doses to keep up a regular but gentle activity of the bowels; and they will soon be found to act very sensibly on the urinary and hepatic secretions. In this way they have a most important and salutary depurative effect upon the blood. In connection with this last medicine, I have generally given an infusion of eupatorium purpureum (*queen of the meadow*) in wineglass doses, three times a day. The free use also of mucilage of marsh mallows (*althea officinalis*) for the ordinary drink, will greatly favor the diuretic action of the other measures, and it affords a pleasant and cooling drink, which in such cases is of no small consequence.

As affording a most important outlet for the more unimportant elements of the blood, which, as has been heretofore shown exist in excess in this disease, the skin should receive particular attention. It should be bathed at night before bed-time with whisky and saleratus water; and on rising in the morning, the entire surface should be sponged with cool, soft water, and this should be followed by friction with a crash towel, in order to secure a more free capillary circulation.

The *diet* should be simple but nutritious and easy of digestion; such as stale bread, ripe potatoes, ripe fruit, rice, and a small por-

tion of rare-cooked meat. Hot bread of every description, pastries and all high-seasoned or greasy food—in short, all articles heretofore placed in the class of indigestibles—should be avoided.

Habits of *regularity* in regard to eating, sleeping and exercise should be observed as far as practicable. The exercise should be free and active, in the open air, and without fatigue or exposure to excessive cold, to the direct rays of the sun in hot weather, or to wet weather. Horseback riding would not be proper unless on an easy horse, and to a very moderate extent; hence an easy carriage or walking should be preferred in most cases.

LECTURE LXIII.

LOCAL DISEASES—CONTINUED.

Diuresis; Preliminary Remarks; Definition; Excessive Secretion, or Diabetes Insipidus; Treatment. Diabetes Melitus: Description; Local and General Symptoms; Condition of Urine; Pathological Anatomy; Quotations,—Prof. Tweedie,—Prof. J. R. Buchanan; Causes; Prognosis; Treatment; Illustrated by Cases.

DIURESIS.

Having discussed, in some previous lectures, the diseases connected with structural disorder of the urinary organs, and having also considered, to some extent, those affections of the urinary secretion termed urinary calculi, I desire to detain you at the present time, with a few remarks upon subjects connected with abnormal urinary secretion.

It was formerly and is even now the custom, with some writers of the highest authority, to consider all excessive discharges of urine under the head of diabetes. But a more rigid adherence to the legitimate signification of terms has latterly restricted the term diabetes to that form of excessive urinary secretion in which saccharine matter is more or less extensively mixed, and has very properly distinguished the other modification, formerly considered under the head of *diabetes insipidus*, as a separate disease, which Dr. Wood terms *diuresis*.

This term literally signifies *excessive* urinary secretion, and is therefore somewhat objectionable, as it might also strictly include diabetes mellitus. But with the explanation that diabetes proper is not intended to be thus embraced, I may expect to make myself understood.

Temporary excessive secretion of urine is a very frequent attendant upon various diseases, and is also observed in many instances where no symptoms of functional disturbances can elsewhere be found. Thus, during the cold stage of intermittent fever, a copious and limpid secretion of urine is a common attendant. The same thing occurs in various other diseases, especially during the

convalescent state, and upon the free use of certain kinds of fruit and vegetables. But these are mere temporary aberrations, in which the secretion is simply diluted, though not deficient in the healthy constituents of that fluid, except in the excess of water, and is neither the cause nor the result of special abnormal action. On the contrary, it may generally be looked upon as a vicarious action of the kidneys in substituting the imperfect or deficient action of the skin, or some other natural depurating organ; or as a temporarily increased effort of those glands, acting in concert with other organic functions, which from any cause, happen to be unusually active. These cases therefore should not be considered in the light of diseases, but as indicative of efforts to prevent disease by preserving a healthful condition of the blood.

This extraordinary secretion may, however, become so continuous as to affect the convenience of the individual, if indeed it does not conduce to the production of serious disorders, though no other abnormal state can be observed than a mere excess of urine. The condition of the system in such cases, will not, at least for a time, suggest the existence of positive disease; but the long-continued excessive action of any function must ultimately result in disease. For some time the amount of urine discharged seems to correspond in some measure, with the amount of fluids taken into the stomach, as such cases are mostly troubled with great thirst; and if the difficulty is not arrested it will be soon followed by deficient action in the capillary circulation upon the surface, and by a diminution of the surface transpiration with other indications of debility, and a gradual loss of healthy action generally. Slightly increased arterial action will soon be observed, with increased thirst, nervous irritability, and imperfect digestion. Up to this period it will generally be regarded as a sensitive condition of the bladder merely, without any other disease; but by more careful investigation, the encroachment of disease will be clearly manifest, and the amount of urinary secretion far exceed the normal quantity.

The statements made by some writers of the amount daily evacuated almost exceed credibility; but when compared with my own observations in one or two cases, and with one case of a child in particular, I am better prepared to credit the statements of others. I will not, however, consume your time by reviewing the book accounts of various extreme cases of the kind.

The term *diabetes insipidus* has been applied more especially to

this form of diuresis from the fact that the urine mainly exhibits a pale and colorless appearance, with very little of the solid ingredients common to healthy urine—presenting a specific gravity little greater than pure water, without much taste or odor of any kind, and entirely wanting in the sweet taste characteristic of true diabetes.

Treatment.—The treatment of these simple cases requires little more than abstinence from the usual indulgence in the use of fluids, especially water, and the regulation of the habits of the patient in other respects corresponding with the ordinary requirements of health; with the use of some moderate restoratives calculated to invigorate the general system. It may require no little self-denial to restrain the demand for drinks to the extent required in these cases. But as long as the blood is kept diluted to that unnatural degree by the daily use of the enormous quantities of water which the demands of the stomach prompt the individual to take, it will be found impossible to divert this afflux of fluid through this important natural outlet, made morbid by continual habit in such cases, by any natural or vicarious action that may be excited in the skin or any other organs. It therefore becomes an imperious requirement that an individual thus affected restrict himself to the use of a small amount of drink, and at least not to indulge in the use of more than is ordinarily proper. In order to aid the resolution of a patient in abstaining from an indulgence generally harmless, the desire for which is, in these cases, so imperious and difficult to control, the diet should at first be directed to be of a simple and unstimulating character, avoiding highly seasoned and salt food, and especially salted animal food. The necessity for animal food does not exist in this form of excessive urinary discharge, as it does in diabetes mellitus, and therefore it may be entirely proscribed for a time with benefit.

The bowels should be kept open by those medicines calculated to act on the glands tributary to this outlet of morbid matter, while such applications should be made to the skin as are best adapted to increase the natural transpiration common to healthy action of the surface. For this purpose the warm whisky and alkaline bath should be prescribed at least once a day, and if the condition of the patient will admit of it, a cold sponge bath may be directed every morning, followed by friction with a crash towel to secure vigorous reaction. The daily free action of the bowels may be secured by taking one of the taraxacum and podophyllin

pills every night, which will also have all the effect upon the liver that can generally be desired, and all that can be expected from any cholagogue known at present to the profession. The debility that may have been induced by this excessive action, so long continued, may be in part overcome by the use of mild tonics, exercise in the open air, and the use of as much nutriment of a healthy character as the circumstances of the patient will allow. A small amount of Scotch ale, taken two or three times a day, and at night a grain or two of valerianate of quinia, may be directed to secure a quiet state of the nervous system, so necessary to healthy and natural sleep in all such cases. But if comfortable sleep can not otherwise be secured, a grain each of ipecacuanha and opium may be taken at bedtime every night for a short time, until a regular habit can be established. But the most important measures are to abstain from the use of drinks, bathe the surface freely, and take abundant exercise in the open air.

The form of the disease I have been considering is intended to include an excessive secretion of urine, without any notable deviation from the normal composition of that fluid, except a mere dilution by an excess of water. A similar abnormal state of that secretion is described in most modern works, which is characterized, in one case by a superabundance, and in another case by a deficiency, of a certain proximate principle of one of the solid substances of this fluid. But it must be confessed that so little is known of the nature of these two modifications, except simply that, in one case, there is an excess of urica, giving to the secretion a greater specific gravity, and in the other a deficiency of the same substance, and that each form is connected with certain general symptoms, that very little of a practical character can be said on the subject. In fact, the relation that most of the urinary disorders bear to the blood and the general system requires a more careful investigation before the practice recommended for their cure can be said to be scientific. The chemistry of the various deranged urinary secretions may be fully understood; but the condition of the general system, and especially the intimate character of the blood from which the secretion is taken, and its relation to that particular abnormal secretion, have not been investigated with that minuteness that is necessary to suggest the remedies for its correction, and I therefore will pursue the subject no further.

DIABETES, DIABETES MELLITUS, OR HONEY DIABETES.

The occurrence of diabetes, compared with most other disorders may be considered rare. The essential character of the affection consists in the formation of sugar in the urinary secretion. An excess in the renal secretion is not, at the present time, considered a necessary attendant upon diabetes, though the disease rarely exists without being associated with an unnatural amount of urine. Dr. Tweedie, in defining this disease, says, that "a *discharge* of saccharine urine, with great tendency to emaciation and suppressed transpiration, is probably less open to dispute than any other."

Few diseases make their approach more insidiously, and with less manifestations of abnormal action, than diabetes. In fact, it often progresses almost to a hopeless state before the true character of the malady is suspected. It is, perhaps, fortunate that excessive urinary evacuation is an early attendant upon the affection, or it might generally progress beyond the reach of medicine before its character would be known. This, upon inquiry, will be found among the earliest manifestations of the disease. The degenerative change of certain substances of the system in the formation of sugar will not long exist without manifest disturbance in other leading functions, and hence the general debility and nervous irritation that are usually manifest quite early in its progress. But the only particular symptom, which would be likely to direct the inquirer's attention to the renal function as the seat of these disturbances, is the copious flow of urine, and it is clear therefore that if it should fail to attract attention the case might progress far toward a fatal result. It thus becomes an important guide in correctly apprehending the disease.

It will first be observed by unusually frequent calls to evacuate the bladder, often disturbing the rest of the patient a number of times during the night. The secretion itself, upon examination, will be found of a pale color, and sensibly deficient in the natural urinous odor. From the beginning of the difficulty there will be a morbid and inordinate demand for food, mostly disproportioned to the ability to digest, and hence a common complaint is imperfect digestion. Excessive thirst naturally accompanies this morbid appetite, and is well calculated to lead the patient into the erroneous belief that the extraordinary urinary discharges are the necessary consequence of the copious draughts taken into the stomach,

while in fact the demand for both food and drink is caused by the morbid condition of the system. It is not uncommon to find that this state of things has existed for some time previous to the calling of a physician, the patient supposing the explanation referred to to be sufficient to account for the whole case, and it is not until a sensible decline and a general failure of strength have occurred that any other suspicion is entertained. The skin meantime, is dry and harsh, in some cases presenting a rough and scaly aspect. Slight exposure is liable to produce a chilly sensation, which is often followed by moderate febrile reaction, but with no tendency to perspiration either from the use of diaphoretics or exercise. From the exceeding thirst and inordinate urinary evacuation, it can not be doubted that absorption is active in full proportion to the deficiency of the surface-transpiration. This correspondence is still more apparent in the progress of treatment, for as the functions of the skin are restored so is the urinary evacuation diminished.

As already stated the functions of digestion are generally disturbed. A morbid demand for food, with less than the usual ability to digest it, are among the early symptoms of diabetes. The tongue is either clammy or high colored, the tip and sides being generally red, and the redness sometimes extends over the surface, with a dry and dark-colored center; the gums are inflamed, and often present a scorbutic appearance, frequently bleeding upon being touched; the throat usually has a similar red or inflamed appearance; the breath generally partakes of the mawkish, sweetish smell of the urine, which is compared to the smell of hay; and the bowels are constipated, accompanied by uneasiness and often by colic pains. The thirst is sometimes uncontrollable, patients drinking almost incredible quantities, stated by some writers as high as forty or fifty pints in the twenty-four hours. The color of the evacuations from the bowels generally indicates a deficient biliary secretion, though the other symptoms attendant on such cases do not show any special derangement in the functions of the liver. The pulse is usually somewhat excited, but mainly feeble, though in some instances it is quite full and hard. Among the symptoms most likely to attract the attention of the patient is a peculiar pain in the head, not constant, but recurring in spasmodic and shooting paroxysms, frequently accompanied by giddiness. The condition of the blood varies in different stages. In the early stage it sometimes presents the cupped and buffy appearance common to irritation, while the serum presents a more milky or whey-

like appearance than natural. At a later stage, more or less sugar is found mixed with the other elements of the blood, while the inflammatory appearances, manifest in the early stage will be less apparent. But as the disease progresses debility and emaciation increase, and finally the excessive watery evacuations that have been draining the fluids of the body are partially checked, but frequently in their place effusion into the cavities follows, or they are diverted by more fatal symptoms of pulmonary phthisis. In other cases, the affection seems to degenerate into organic disease of the kidneys, and the patient sinks under the leading symptoms of Bright's disease.

The *condition of the urine* presents the most interesting feature in the history of the disease, more however from the similarity which it presents in some respects to certain other urinary disorders. Thus, the urine, in simple diuresis often equals in quantity the severest case of diabetes and presents a very similar appearance, yet differs in its specific gravity, and in some of its sensible properties. The amount of urine discharged varies in different cases, but as a general rule is greatly increased above the healthy standard. In some instances the amount discharged is very great, said by some writers to exceed a hundred and fifty pints in the twenty-four hours, and is rarely diminished to the ordinary standard until influenced by treatment. Not only is the amount increased in proportion to the quantity of fluids taken into the system, but often exceeds the whole amount contained in the food and drink. Mainly however the discharge corresponds to the quantity of fluids taken into the system. To account for this excess, we must presuppose the absorption of the fluids natural to the system, and also the imbibition of water from the atmosphere through the lungs and skin.

Another important difference between diabetic and ordinary urine is that the former holds in solution a quantity of solid matter greater than the natural and healthy excretion. The specific gravity or density of the healthy fluid, on an average, may be stated at about 1.020 to 1.030, while that of diabetic urine varies from 1.035 to 1.055, thus showing a very considerable difference in the solid matter discharged in the urine. Dr. Tweedie says: "The kidneys are commonly found larger than in health, more flabby, more gorged with blood, and presenting more numerous and larger vessels, and enlargement of the uriniferous tubuli. The renal arteries and veins are also found at times enlarged. In general, no other morbid appearance is found in the kidneys; but in some

cases there is an extensive deposition of grayish-yellow, granular matter, invading their cortical and even also their tubular structure. In one instance an extensive deposition of hydatids has been observed. When an attempt has been made to investigate the state of the kidneys by injecting them, it has been merely remarked that the injection flows well, and that the injected vessels are numerous and large. The urether is sometimes enlarged, generally also the bladder, and occasionally even the urethra; but not unfrequently there is no alteration in any of these organs from the healthy state. On the whole it may be considered, that so far as anatomical information has yet been obtained, the urinary organs present, for the most part, no further change than what appears to indicate an increased demand merely upon their function. It is perhaps worthy of being added, that in a case which proved fatal in the first year through incidental peritonitis, the writer could find no unnatural appearance whatever in the urinary organs, except some increase of vascularity and of blood in the kidneys. In a few instances the kidneys, instead of being enlarged, are found contracted. Tubercles in the lungs are not uncommon; they are found softened, and even extensive cavities have been observed. The mesenteric glands have at times been seen considerably enlarged, but this is far from an invariable appearance. The stomach is often quite healthy, sometimes red, or its inner membrane also rough and thickened, as is often seen in old dyspeptic cases; and, not unfrequently, it is much enlarged. The liver, spleen, and pancreas are usually healthy. The intestines do not present any unusual appearance in the generality of cases.

“It is plain, therefore, that *pathological anatomy* throws no positive light on the nature of this strange disease. Nevertheless it enables the pathologist to advance some steps in his inquiries.

“In the first place, it appears highly probable, from anatomical considerations alone, that the pathological source of diabetes is a functional, and not essentially an organic derangement. At least, no distinct derangement of structure has hitherto been pointed out even in a majority of instances. This conclusion derives no small support from the fact that urine essentially diabetic will often become natural for a few days before death. It is also supported by an analogous fact, though a solitary one of its kind,—an instance mentioned not long ago in a German journal, where, twice at least, if not thrice, during pregnancy, the patient was suddenly

attacked with saccharine diabetes, and as quickly recovered from it after delivery. * * * * * Whether the formation of sugar in the stomach be the only essential and fundamental condition for the development of diabetes, is a question which still remains to be answered, and is one obviously susceptible of experimental elucidation. It seems probable that nothing else is requisite for establishing the disease. There is no physiological reason why sugar formed in the alimentary canal should not be, in some measure, absorbed into the blood; and notwithstanding the negative results of many prior experimentalists, the late researches of *Ambrosiani*, *Maitland*, and *Macgregor* seem adequate to prove that it is positively present. Such being admitted to be the case, no further difficulty would exist in accounting for the peculiar condition of the urine, without the necessity of assuming the concurrence of some peculiar irritation or modification of the renal function. For the greater part of foreign substances admitted into the blood are well known to be promptly discharged from the body through means of the urine; and diabetic urine might be fairly considered as coming under this category."

Other views seemingly as well sustained and tested as those given by Dr. Tweedie, which refer the true nature of the diabetes to abnormal action in the liver, are set forth in a work preparing for the press by Prof. J. R. Buchanan, a short extract from which was published in the *Eclectic Journal* for February, 1854, and a portion of which I here reproduce. "The most important recent discovery concerning the liver, is that of C. Bernard, of Paris, who has pointed out a glucogenetic and olefiant function of this organ. The blood generally contains a small quantity of glucose or grape sugar, a substance less sweet and soluble than the cane sugar,—also less crystallizable and more easily formed from amylaceous substances. Its chemical formula is $12\text{C. } 14\text{H. } 14\text{O.}$ Glucose is developed in the chyle and the blood, in consequence of the transformation of amylaceous substances in the alimentary canal (forming this peculiar sugar which is taken up by the lacteals and veins), and in consequence of the transforming influence of the liver upon the portal blood. That the liver thus develops glucose in the blood, is proved by the fact shown by M. Bernard, that glucose, or a substance nearly identical with it, is found as a regular constituent in the blood of the hepatic veins, no matter what may have been the diet of the animal. Being in the hepatic veins, it is necessarily found in the onward progress of

the same blood in the ascending *vena cava*, in the right side of the heart, and in the pulmonary artery. It is a remarkable fact that the formation of this species of sugar does not require amylaceous food, and that an animal, fed for some time on animal food alone, yields sugar from the blood of the hepatic vein, when none has been introduced into the liver by the portal vein. This clearly establishes the saccharifying power of the liver, which is exerted upon the blood. In the liver itself, consequently, sugar is always present, even in the embryo. In the liver of the human adult, sugar has been detected in such quantity that the whole liver was estimated to contain three quarters of an ounce.

“In diabetes mellitus or mellituria, the quantity of sugar formed by the liver is vastly increased, and is discharged in great quantities by the kidneys. This would indicate that mellituria was really a disease of the liver, an excess of its glucogenetic function. (In the liver of a diabetic subject, Bernard found as much as 833 grains of sugar.) It is probable, therefore, that the treatment of mellituria, by agents which make an impression on the liver will be found the most successful.

“This saccharific function of the liver appears to be controlled by the pneumogastric nerve and the medulla oblongata. The irritation of the medulla oblongata at the origin of the pneumogastric nerve, by puncture or by a galvanic shock, will cause such an increase of the saccharine function, that liver-sugar will be found in all the fluids of the body (except the saliva), and will be discharged by the urine, thus producing a temporary mellituria, which continues for four days or longer in the dog, and for two days in the rabbit.

“This glucogenetic function of the liver shows the antagonism of its functions to those of the lungs. Glucose, like other compounds of the saccharine class, yields but little heat in its combustion, and the change of the elements of the blood into such a substance must have a tendency to lower the temperature. Hence the animals that have been made diabetic by irritation of the medulla oblongata, have their temperature lowered, several degrees, although their respiration is hurried, and an increased quantity of carbonic acid gas is thrown off. Their blood is also darker than usual. The liver, therefore, is the exact antagonist of the lungs, as it is engaged in producing an element which the lungs are engaged in destroying; and while the lungs elevate, the liver lowers the bodily temperature. The peculiar sugar produced by the liver is

very readily destroyed by the pulmonary action. This is shown by the statements of Magendie and Bernard that it requires nearly five times as much of the liver-sugar to produce a given saccharine condition of the urine, as it does of the true glucose, and two hundred and forty times as much of liver-sugar as of cane-sugar, which shows that liver-sugar is more rapidly decomposed by the lungs than any other sacchrine substance.

“Whether sugar is produced in the tissues generally, as well as in the liver, is not certainly known. Lactic acid, a substance very similar in composition to sugar, is known to be abundantly produced in the muscular tissues, and recently Scherer professes to have discovered a saccharine substance in the juice of the flesh, which he calls inosite, the formula of which is 12 C. 16 H. 16 O.

“The liver is believed to be a fat-making as well as a sugar-making organ. The hepatic vein, according to Bernard, contains more fat than the portal. In herbivorous animals, it is supposed that the liver is concerned in a fatty transformation of amylaceous and saccharine substances. Such substances do assist in fattening animals, and it is supposed that the liver actually transforms them into fat. It may be however, that they become substitutes for the regular formation of liver-sugar, and thus enable the liver to form fatty matter from the protein substances of the blood, which is its more common action. The sugar-making and fat-making functions appear to be distinct and opposite in character. The bodies of mellitic patients are deficient in fat—in their livers fat is deficient, and in the fatty livers of consumptives sugar is lacking. The sugar formation in the liver is more characteristic of carnivorous, and the fat of herbivorous animals. The formation of fat from the albuminous elements of the blood is shown to be possible, by the fattening of animals, which is not proportioned to the quantity of fat in their food. It is also illustrated by the degeneration of the tissues of the body, which frequently occurs in life as well as by the formation of adipocere from flesh when macerated.”

Thus it will be observed that no settled or uniform views are entertained in regard to the intimate nature of this affection, and though one or the other of the views here set forth may be correct, little of a practical character has yet been deduced.

Causes.—A correct knowledge of the true pathology of diabetes would, no doubt, be a key to the cause of the difficulty, and at the same time would be the most important step toward its cure. But since the most important points connected with the disease are yet

undetermined, and the opinions of the essential character of the affection are at best merely theoretical, we may as well confess our ignorance of the circumstances of its production, as to attempt an explanation that may hereafter be shown to be erroneous. Many circumstances have been observed bearing such a relation to diabetes as would seem to mark them as probably producing it. But when it is known that the same influences have operated in thousands of instances, under circumstances equally favorable to the production of the affection without causing it, we should at least hesitate in our conclusions, and search further for its cause.

Prognosis.—The insidious approach of the disease generally allows it to progress so far before medical aid is called, as to render the termination of most cases unfavorable. But when the disease can be met before it has made too great progress, most cases should get well.

Treatment.—Whatever may be the pathological relations of the system to the formation of diabetic urine, the second, if not the first indications would naturally be to withhold from the system those substances that can be converted into sugar, or that contain saccharine matter ready formed, and then to restore tone to the system, upon the want of which the difficulty may in a measure be depending. That this course, together with the administration of appropriate remedies to excite a healthy hepatic secretion, and relieve the irritation usually found in the roots of the spinal nerves, will most effectually fulfill the main indications of the case, I am led to conclude from the most reasonable views of the phenomena presented by the disease, and from our knowledge of the functions of digestion, and the important part which the liver performs in the perfection of that process, as well as from the suggestions of experience.

To fulfill the most important indication, patients should be put almost exclusively on a moderate fresh animal diet, specially avoiding those vegetable substances that contain starch, as this substance is readily converted into sugar, and more particularly avoiding those vegetables which contain sugar ready formed, such as beets, parsnips, etc. As bread, rice and potatoes are largely made up of starch, these articles should be proscribed. Experience fully sustains what theory in this instance suggests. In almost every case where experiments have been made, diabetic patients have grown worse, and the saccharine matter has decidedly increased, after the use of bread and potatoes. Although water does not add to the

saccharine quality of the urine, yet, from its direct influence in diluting the blood, in increasing the action of the kidneys, and thereby perpetuating the irritation existing in those glands, the necessity for preventing its use in any considerable quantity becomes apparent. Patients, therefore, should be allowed but a very small amount of fluids of any kind. A cold infusion of common tea will be found the most harmless, and at the same time quite as efficient in allaying thirst as any drink that can be taken. Patients may be allowed to take a swallow of this every hour or two. While it allays thirst, it possesses a moderate astringency, and will be found to increase the urinary secretion as little as any other drink.

While this course of dieting is being vigorously pursued, proper attention to the skin is a matter of not much less importance. The necessity of a healthy condition of this great emunctory, in most diseases, has been too much overlooked, and though its disorder can not be regarded as the prime cause of diabetes, yet universal observation proves that it does not perform its natural part in this disease, in eliminating from the blood the usual amount of fluid, and thus leaves the kidneys to perform a portion of its work, thereby increasing their already excessive action. Frequent bathing is, therefore, desirable in this disease. The warm alkaline and spirituous bath may be used before going to bed, and the cold sponge-bath in the morning before dressing; in both instances following with brisk friction, especially over the spine, to secure a free capillary circulation. Simultaneously with these measures, it is all important that the condition of the stomach and liver should be particularly looked to. To promote the most immediate and healthy action of the liver, and thereby produce a corresponding condition of the other organs concerned in digestion, the compound taraxacum and podophyllin pill should be given every night and morning, or in such quantities as will secure at least one evacuation from the bowels every day. But when the stomach is found loaded with vitiated secretions, it will be well to premise with a mild emetic, and this indeed may be repeated in a few days, if the effect of the first appears beneficial.

As a tonic, in these cases, a decoction of ptelea and wild-cherry may be given in wineglassful doses three times a day. Few medicines have a more marked influence in diminishing the excessive urinary excretion than opium. But its influence upon the other glandular secretions, renders its administration generally objection-

able when we can get along without it. Yet in cases of great nervous irritability its use may become indispensably necessary. It may be given, however, so as to subserve a valuable purpose, in addition to its quieting effect upon the nervous system. In combination with ipecacuanha in equal parts, given in three-grain doses of the compound, and repeated as often as may be necessary as a sedative, it will rarely fail to produce a moderate relaxation of the skin, followed by a more soft and often moist state. Moderate exercise in the open air is generally beneficial in most chronic diseases, and when the strength is not too much exhausted to admit of daily exercise, it should not be neglected.

Various other remedies have been tried, and some appear to be so well sanctioned by experience as to entitle them to the benefit of a trial, when those remedies which our own experience more particularly recommends fail to answer our expectation in relieving the disease. Among these, creosote is said to have been successful in curing an unpromising case. This case is copied from the London Lancet by the Boston M. and S. Journal, for September, 1834, as follows: "The following is a short account from Hufeland's Journal, for February last, of an eighth case of the above disease, treated by Professor Berndt, of Driefswaltdt, after having treated the preceding seven with opium, emetic, arsenic, bleeding, etc., all unsuccessfully. The seven all died. The eighth patient was a man fifty years of age, who daily passed seven and a half pints of urine, which, when analyzed, was found to contain a good deal of sugar. There were considerable thirst and appetite, and little sleep, but no hectic fever had appeared. An emetic was at first administered, and the patient then put on Rollo's diet, but without benefit. Finally, he was directed to take daily eight drops of creosote in sixteen pills of gum arabic. The thirst and appetite were soon reduced, the excretion of urine was brought down to three pints and then to two. The dose of the remedy was now increased, and the animal diet suspended after three weeks' employment. The urine now contained much less sugar, and began to offer some traces of urea. From this period the quantity of urine rapidly diminished, the sugar gradually disappeared, and the excretion finally assumed its natural qualities, and was discharged in regular quantity; the patient, in a word, was perfectly cured."

The treatment of another case is given in the Boston M. and S. Journal, in which the tincture of cantharides, together with an

exclusive animal diet, proved successful, after the trial of various other measures without any apparent benefit. The case is thus reported by Dr. Hall, Professor of Obstetrics in the University of Maryland: "On the 22d of April, 1831, I was requested by Dr. E. Perkins, of this city, to visit with him Robert Kinnier, a lad about seventeen years of age, laboring under diabetes. On reference to my notes, I find the details of the same as here given. Our patient seemed to be somewhat emaciated; had a sallow complexion, with those appearances of general disorder which often follow our autumnal remittent fevers. On inquiry I learned that he had suffered by an attack of this disease during the preceding autumn, while engaged with his father on the line of the Baltimore and Ohio railroad; and after the more severe symptoms of the attack had passed away, a remittent fever with irregular paroxysms had continued to manifest itself occasionally. At the time we saw him, these paroxysms were interrupted; but he still remained languid, incapable of active exercise, and much depressed in mind. He sometimes walked slowly in the open air, from which he experienced fatigue. His liver seemed to perform its functions slowly, but there was no tenderness or enlargement from which might be inferred a serious disturbance of this organ. He had occasionally a very slight cough. The tongue was whitish, and his skin cool. The perspiration did not appear to be materially changed from the standard of health. We requested that the urine should be retained for our examination, and the quantity discharged between the hours of nine o'clock in the evening and six of the following morning (nine hours), was found by measurement to be more than one gallon, of a pale straw color, and sweet to the taste; pulse 84; appetite irregular, digestion also imperfect. He labored under no important pulmonary disturbance, and the alvine dejections evinced the presence of biliary matter.

"Tonics were first directed. S. quinia, phosphas. ferri, etc., were freely used without apparent benefit for some time. No vegetable preparation, except bread, was allowed to be taken. His diet was directed to be purely *animal*, with the foregoing exception. Still, finding that his diabetic symptoms were not materially altered, we prescribed the tinc. meloc. vesicat. m. xx. ter. die., directing an increase of five to ten drops each dose, unless strangury should be perceived.

"On the 19th of May, we found his pulse 84—one pint of urine discharged during the night—bread omitted and diet altogether

animal. It may be remarked that he relinquished the use of bread with great reluctance, occasionally obtained it by stealth, but acknowledged that it always increased the flow of urine. He then concurred in the propriety of the prohibition, and abstained from its use. On this day he was taking 270 drops of the tincture thrice a day—tongue more natural—urine less—bowels more regular—directed to increase the tincture. He sleeps more comfortably during the night.

“On the 9th of June, doses of tincture four hundred drops, which produced a slight strangury—bowels regular, and feces natural in appearance—urine last night 3iv.—diminished the quantity of the tincture—pulse 84.

“June 12th.—Takes 350 drops—tongue more natural—pulse 90 and soft—appetite and digestion improved—so also his general appearance. After this period he gradually increased the amount of the tincture to four hundred drops each dose, without strangury and with manifest advantage. He now was enabled to take exercise in the open air, and his strength was increasing daily.

“On the 19th June, he applied to the apothecary for a fresh supply of the tincture. A small quantity remained in the bottle from which he had previously been supplied, and in taking it down from the position which it occupied, the fluid was agitated, and thus suspended much of the fine particles of the cantharides. Of this turbid fluid he took in the morning 425 drops, estimated to be double the strength of the pure tincture. Pain of the kidneys, distressing strangury, and urine slightly tinged with blood, followed. When called to visit him, I found his pulse 95 per minute, voluminous and active. The warm bath was forthwith directed,—m. 60 Tr. opii. with 3i. ol. ricini were given with mucilaginous drinks. He was soon relieved and readily evacuated the bladder. The quantity of fluid was small. 20th June, pulse 90—quite composed—free from pain and strangury; urine natural, and moderate in quantity. Directed the tincture to be omitted. No morbid change, or increase in the quantity of urine was perceived after this. On the 23d of June, he had a slight paroxysm of remittent, which was speedily interrupted by the use of S. quinine. Pulse 80 on the 26th, and no evidence of diabetes remaining. He soon regained his strength, and entered on an active course of duty, as a grocer, in Baltimore.”

The same journal contains the recommendation of a decoction of sweet-apple-tree bark in wineglassful doses three times a day.

The following case, recited in the same journal for March, 1854, was that of a boy six years and eight months old. The writer says he "analyzed a specimen of the urine, with the following results:—The urine pale straw color. Specific gravity 1.040. No acid reaction. No appearance of albumen. Most decisive evidence of grape sugar. The treatment advised was a cathartic of castor oil—to be followed by a drachm of cod-liver oil, three grains of phosphate of iron, and six drops of liquor potassæ, each three times per diem at intervals of one hour. The patient was to be confined to a strictly animal diet. On the 17th [after four days] I again examined the urine, and found it improved in color, specific gravity 1.030, a slightly acid reaction, abundant evidence of grape sugar.

"The treatment was continued, but the patient having vomited the cod-liver oil a cathartic of calomel was given, followed by castor oil. The same treatment was then continued as before, except that the dose of liquor potassæ was diminished from six drops to three. From this time the quantity of urine diminished daily. Diaphoresis was easily instituted, and all the symptoms were much improved.

"Jan. 10th. Another specimen of urine was examined, which resulted as follows:—Color of the urine normal. Specific gravity 1.016. Acid reaction. Slight evidence of sugar. For the two weeks previous to this date, the diet of the patient consisted of cheese and eggs. The quantity of urine was normal."

"Feb. 12th. I again examined the urine, and found it as follows:—Color normal. Specific gravity 1.020. Acid reaction. No trace of sugar. The patient to all appearance is well. His weight has increased, since Dec. 12th, seven and a half pounds. He was vaccinated for kine-pox the last week in January with success. Occasionally he 'helped himself' to other kinds of food, but in the main he was confined to animal diet. The boy is at present ruddy and active, with no evidence of disease about him."

There is, probably, no disease the treatment of which is more justly chargeable with empiricism than diabetes, and this must continue to be the case so long as the cause of the difficulty is involved in obscurity. I have given you the main points to be observed in the treatment, as well as some of the prominent modes of treatment, which have been found least injurious and probably most beneficial.

LECTURE LXIV.

LOCAL DISEASES—CONTINUED.

Suppression of Urine: Difference between Suppression and Retention; Suppression Described; Effects on the Constitution; Causes of these Effects; Causes of Suppression; Treatment. Retention of Urine: Description; Different Forms from Different Causes; Treatment. Incontinence of Urine, or Enuresis; Description; Treatment.

SUPPRESSION OF URINE, OR ISCHURIA RENALIS.

The terms *suppression* and *retention* of urine are sometimes used in common parlance as synonymous. But the meaning of the two terms is entirely different, and is so taken by all respectably educated physicians. By suppression of urine is understood a greatly diminished or complete arrest of the secretory action of the kidneys. It can not strictly be considered as a primary disease, for whether it be dependent upon want of action in the function of the kidneys, or upon a diminished amount of the elements of the urinary secretion in the blood, it would still be symptomatic of some prior existing disorder.

Suppression of urine is a common attendant upon low grades of fever, and the increase of the urinary secretion often becomes the main indication to be fulfilled in the treatment of dropsical affections. But the symptoms so often present themselves unconnected with other more apparent disorders, as to fully justify a brief consideration of the subject as an independent disease.

To constitute this difficulty does not require an entire interruption in the secretion, but an unnatural departure from the ordinary amount discharged. It will therefore be perceived that each case must be compared with itself, in determining whether it should be considered one of disease. For while the amount discharged by some individuals as compared with others would be considered a sufficient departure from the ordinary amount to constitute diseased action, yet when compared with the usual quantity evacuated by the individuals affected, it might be found only a slight deviation from the general habit. Thus, while some individuals in

health urinate half a dozen or more times in twenty-four hours, and pass at each evacuation a pint of healthy urine, another person, in the enjoyment of equally good health, will not be called upon more than twice in the same time, and his several discharges will be less in quantity than those of the former. But if the discharges of the former should be reduced to the quantity that constituted the standard of health in the latter, we should be fully justified in considering it a sufficient departure from the healthy and necessary amount to constitute a case of disease. And when the case presents nearly or quite an entire arrest of the secretions, we should have no hesitation in considering it one of disease, and treat it accordingly.

It will not answer however to consider every case a suppression of urine, in which that fluid is not discharged; for by so doing we would be liable to increase the difficulty which we are called to relieve. The urine may be freely secreted, but owing to some obstruction in the urinary conduits, either in its passage to the bladder, or in the neck of the bladder or urethra, when thus far on its way, or for want of tone in the muscular coat of the bladder, be retained, while the ordinary amount is secreted by the kidneys, and any medicine calculated to increase the secretion until the obstruction is removed, would only add to the difficulty of the case. It becomes a matter of some importance then to ascertain the facts in the case before we proceed to treat it. If the urine is retained in the bladder, it will generally be indicated by more or less local uneasiness, either at the neck of the bladder or above the pubis, or by a sensible fullness observed on an examination. But the most positive determination of the question is by the introduction of the catheter. If retained in the kidneys or ureters, the local symptoms in those parts will generally indicate that fact; if in the kidneys, pain and tenderness on pressure over those glands will generally be sufficient guides. So also when the obstruction exists in the ureters, the accumulation of the urine above the obstruction, together with the pain and uneasiness arising from the cause of the obstruction, will usually point out the difficulty with sufficient precision to determine the diagnosis. Yet in cases of this kind, it will not answer to rely upon any one fact in settling the question, but we must look to the whole case, and make our deductions from the preponderating evidence that relates to it. Suppression of urine arising from those influences affecting its secretion, is rarely complete; while retention, either in the kid-

neys, ureters, or bladder, is more frequently attended by an entire arrest of the discharge.

It is not the *amount* of fluid, retained in the circulation in consequence of the inactive state or inability of the renal organs to secrete the usual quantity of urine, that renders the affection of so much consequence; but it is the peculiar poisonous effects of one of its constituent principles, when retained in the circulation, that constitute the chief source of embarrassment and disease. Few if any of the secreting glandular organs are so entirely depurating in their functions as the kidneys. The liver, pancreas, and salivary glands, while they all furnish a certain amount of purely effete and excrementitious matter, which is more or less hurtful to the animal economy, and may be productive of disease when retained in large amounts, supply also other principles that are important as subserving necessary purposes in the process of absorption and nutrition. But the function of the kidneys is, without doubt, purely depurating, and the complex fluid, eliminated by these important emunctories, is entirely excrementitious, and hurtful when allowed to accumulate in undue quantities. They all consist of old, stale, inorganic elements and compounds that are no longer useful to the system, which, though they are generally found in small quantities in the circulation, are nevertheless mostly eliminated as fast as they are formed; and, though they all tend to embarrass the organic laws and produce disease when in excess, yet none are so serious, and often fatal, in their effects as urea.

Although the chemical character of the urine has been very carefully studied, and all its elements pretty fully described, it is nevertheless true that the pathology of most of the diseases incident to the derangement of the renal functions is less perfectly understood than that of most other affections, and we are therefore under the necessity of prescribing more from theory, in the treatment of these disorders, than in most others, or than is agreeable to a practical mind. Few of the causes of these affections, especially of suppression, are so apparent as to be distinctly recognized, and allow the direct application of remedies for their removal, and this is an additional reason for the empirical character of the therapeutics of the disease.

Causes.—As just intimated, the causes of the disease can not in many cases be very intelligibly defined. In most cases it is an attendant upon other diseases, and in that relation has to be treated merely as a symptom. In typhoid, and many other low and

exhausted states of the system, suppression of urine is very common,—partly referable to the general exhaustion, and partly, no doubt, to the condition of the blood. In these cases, it is not uncommon for patients to pass but a small quantity once in twenty-four or forty-eight hours. In Bright's disease, and especially in the latter stage of the disorder, a partial and sometimes an entire suppression is very common. In most dropsical affections it is among the most prominent symptoms, and the most important indication for their cure is to restore the urinary secretion. It is among the earliest manifestations of affections of the brain following cholera infantum. In epidemic cholera, the entire arrest of the urinary secretion is very common, the bladder being found empty and contracted.

Partial suppression of urine may exist for a long time without producing any serious inconvenience or disease, the elimination of the poisonous urea taking place, perhaps, through the vicarious action of some other organ, or possibly being less perfectly supplied than usual. In some cases the perspiration has a decidedly urinous smell, and no doubt the other emunctories may for the time being supply, in a limited way, the deficient action of the kidneys. But when the suppression becomes complete, and comatose symptoms supervene, little doubt can be entertained that the nervous system is sinking under the poisonous influences of the urea, and will generally prove fatal. Where no urgent symptoms follow the arrest of the secretion, we may reasonably infer that the urea is not formed in its usual quantities, or that the substituting influence of other eliminating functions is removing it from the circulation. Many cases are recorded in which the urinous smell was perceived in various secretions from other parts, such as the saliva, the perspirable matter from the umbilicus, axilla, etc.

Treatment.—If it is possible to ascertain the cause of the difficulty, this should be our first and main object. If inflammation of the kidneys should be found to be the producing influence, the case should be treated as for that disease. Cups should be freely applied to the region of the kidneys followed by hot fomentations, and a brisk and active cathartic should be given. For this purpose the compound powder of senna and jalap with cream of tartar is perhaps the most efficient and reliable. The patient should also be directed to drink freely of the marsh mallows or flaxseed tea and may take from six to ten grains of the acetate of potash every two hours.

But if the case is dependent upon mere atony of the renal glands

and diversion from the kidneys, by the serous accumulation in the cavities or other parts, the most active diuretics should be given. The cider and elder preparations, with cream of tartar and rock candy, and other hydrogogue medicines, should be prescribed, as recommended for the different forms of dropsies. The action of the kidneys is sometimes more readily excited by gentle tonics and diuretics combined than by either alone. The common gin bitters I have frequently found to have a beneficial effect in such cases, especially when given so as to act moderately on the bowels. In many cases, the apocynum, as recommended for dropsies, will succeed in promoting the urinary secretion, when other agents more decidedly diuretic, or that may be supposed to act more directly upon the kidneys, fail to answer the purpose. Squills, digitalis, spirits of nitre, and a decoction of spearmint, will all be found occasionally useful in certain forms of the disease; while a simple but often effective remedy in exciting a more free urinary secretion, will be found in a decoction of mullein leaves, which may be taken freely. For children, I have as often derived advantage from watermelon-seed tea, or from an infusion of parsely or pumpkin-seeds, as from any simple remedy that I have ever used. The eupatorium purpureum and asclepias syriaca, both possess valuable diuretic properties, and may be used in almost any case where diuretics are indicated. An ounce to a quart of water of either of the articles will be the proper quantities for a decoction, and may be taken in wineglassful doses three or four times a day.

But the obscurity of the cause of the difficulty will often produce in the mind of the inexperienced practitioner a feeling of uncertainty as to the proper course to be pursued. In this case, as in many others, the judicious practitioner will be quite certain that his prescriptions shall do no injury, by administering simple and harmless remedies. In those cases clearly connected with other diseases, in which it is quite impossible to determine the relative importance of the secretion for the recovery of the patient, we should be very cautious how we administer active medicine of any description. We should rather wait until some plain indication presents itself before we proceed. In these cases the milder diuretics, such as the decoction of mullein-leaves or watermelon-seeds, should be preferred.

RETENTION OF URINE.

By this term is understood an obstruction in the evacuation of the urinary secretion, occurring either in the ureters or bladder.

The first is called *renal*, and the latter *vesical* retention. Retention of urine from obstruction in the passage from the kidneys to the bladder, is not a very common occurrence. It may arise from acute inflammation of the ureter, or chronic thickening of its coats, or from the passage of renal calculi. In either case it becomes a serious disease, and may very soon prove fatal. It may be distinguished from suppression by far greater pain and suffering, and this confined mainly to the region of the ureters.

The retention is rarely complete, as it is very uncommon for both ureters to be obstructed at the same time, and in this case the partial retention, with the local symptoms, will be sufficient to determine the case. The obstruction, in all such cases, becomes a source of great suffering, and if not speedily relieved is liable to produce an effusion into the cavity of the abdomen. Or the accumulation may cause inflammation, which may result in abscess and disorganization, with rupture and discharge of pus into the cavity of the abdomen. The obstruction in these cases may be produced by a small coagulum, by a calculus, by constriction of the ureter, or by pressure of a tumor upon it.

Vesical retention is a very common complaint, and may result from obstruction at the neck of the bladder, or in the urethra, or from paralysis of the muscular coat of the bladder, rendering the individual unable to discharge the urine after it is secreted. Inability to urinate is mostly accompanied by more or less pain, in some instances of the severest character, and is therefore not very liable to be overlooked or mistaken. The full and round tumor that can usually be felt, especially in spare persons, immediately above the pubis, with the absence of evacuation, even if there is no pain, will generally suffice to determine the true character of the difficulty. But in very fleshy persons, or in a tympanitic state of the bowels, the distended bladder will be less readily detected. Yet in this case, percussion will be found to yield very little sound, and it may thus be determined. It may however be rendered more difficult to determine by dropsy of the abdomen; but in this case, pressure on the bladder will be productive of pain and uneasiness that are not present in ascites. If any doubt still exists, the introduction of the catheter will soon settle it. The accumulation becomes so great, in some cases, as to distend the bladder far up into the abdomen, producing serious inconvenience, and often great pain and suffering. In some cases it is said the distended bladder has been mistaken for ascites.

This, like the other form, may be produced by mechanical obstruction, but unlike the other is sometimes produced by spasm of the neck of the bladder, or by palsy of that organ. It is sometimes produced temporarily by a stone lodged in the neck of the bladder, but more frequently by stricture either at the neck of the bladder, or in the urethra. But, in some instances, it comes suddenly from cold or other exciting causes, producing irritation and spasm. This is usually attended with very severe pain and suffering, all referable to this region. It is also often caused by paralysis of the bladder, by which the contraction of the muscular coat is destroyed; and the bladder often becomes distended, without pain, to a very great degree. Retention of urine is frequently an attendant upon child-birth, and is not only productive of severe suffering, but also greatly retards the labor, and may result in rupture of the bladder by the severe pressure upon it, if not relieved. In such cases, the only course is to evacuate the urine with the catheter. But a common female catheter will not answer the purpose, as the distended bladder is above the pubis, projecting forward so far as to render it impossible to introduce a common silver female instrument; and in such a case a flexible gum catheter without the wire should be used. In a number of cases I have known the labor, which was greatly delayed, and accompanied by inefficient but distressing pains, to proceed with great ease and rapidity after thus evacuating the bladder.

Retention from paralysis of the bladder, when it is complete, is the result of a want of the contractile power of its muscular coat, but the loss of action does not extend to the fibro-muscular sphincter at the neck, as in that event the case would exhibit more of a mixture of incontinence and retention. In this case, where the paralysis involves the whole muscular structures concerned in the retention and evacuation, the urine is liable to pass off upon any change of position, as often as it is secreted, and occasion great inconvenience and very unpleasant consequences.

Treatment.—Those rare instances of renal retention, which depend upon inflammation about the pelvis of the kidneys and ureters, must be treated similarly to an ordinary attack of inflammation, by cupping, fomentation, and hydragogue cathartics, with mild mucilaginous and cooling diuretics. The compound powder of senna and jalap, with cream of tartar, the marsh mallows and acetate of potash, and other similar agents will be appropriate in such cases. But when it is produced by renal calculi, by which

one or both of the ureters are plugged up, hot fomentations and anodyne antispasmodics, with the alkaline bicarbonates, are the most reliable measures at present known by the profession. They may be used simultaneously with abundant diluent diuretics, in order to render the urinary secretion less irritating than it is usually found to be in such cases.

But when the retention is in the bladder, the measures to be employed must depend entirely upon the cause of the difficulty. If it is produced by inflammation, the measures heretofore recommended for cystitis are to be applied, such as hot fomentations, cooling diuretics, and free hydragogue purgatives. The catheter, also, should be used to relieve the distended bladder, when necessary, which is rarely the case. When it is produced by sudden cold, resulting in spasm of the neck of the bladder, the warm hip-bath, hot fomentations applied immediately over the pubis and frequently changed, a full dose of the sudorific tincture (compound tincture of Virginia snakeroot), in warm spearmint tea, and an injection, if necessary, of asafœtida and laudanum, should all be resorted to in as short a time as the circumstances will allow. The philosophy of these various measures requires but little explanation, as it is mostly self-evident. The sudorific tincture determines to the surface, producing at the same time general relaxation, and relieving very promptly the severe sufferings of the patient by relaxing the sphincter, which is generally followed by a discharge of urine. If this should not follow after the severity of the pain is mainly relieved, little difficulty will be experienced in introducing the catheter; while before such relief occurs the spasm at the neck of the bladder will be too unyielding to admit of the passage of the instrument. In less severe cases of this description, I have often obtained entire relief from tincture of muriate of iron given in five-drop doses every hour, with hot fomentations applied to the lower part of the abdomen.

The cases of retention of urine, dependent upon paralysis of the bladder either partial or complete, will often require the most persevering efforts for a length of time before you may expect relief; and even then, when the disease is seated in the roots of the spinal nerves, as it is in many cases, and especially if the case be one of paraplegia, our best-directed efforts may be useless. While, however, we may be under the necessity of relieving the patient by daily evacuating the bladder with the catheter, and while we

may administer internally those medicines best calculated to excite action in the palsied organ particularly, our main curative measures will be found to consist in removing the irritation from the roots of the spinal nerves. For a short time during the first part of the treatment, cups and scarification may be applied to the lower part of the spine, over the seat of the origin of the nerves running to those parts, and repeated every day; while a current of electricity should be passed through the affected parts, applying one pole to the spine and the other to the perineum above the pubis, or it may be conducted directly to the bladder by introducing a bougie into the urethra: and strychnine may be given internally until its specific effects are realized. After it is thought best not to apply the cups any longer, a constant discharge should be kept up over the seat of the difficulty by means of the irritating plaster. For this purpose, a plaster eight or ten inches long and three wide should be as constantly worn on the lower part of the spine as the irritation it creates will allow. But where the difficulty is a more temporary loss of the action in the bladder, connected with general debility, in addition to the local measures, or such of them as may be thought necessary, the internal use of spirits of turpentine, or the tincture of cantharides, until an effect is produced on the neck of the bladder, may be prescribed. The turpentine may be given in twenty-drop doses, three times a day, or the cantharides in thirty-drop doses, gradually increasing, say five drops every time it is repeated, until symptoms of strangury are discovered. At the same time, mild tonics, such as the tincture of muriate of iron, and a decoction of wild-cherry bark in two-ounce doses, may be administered. But if the bowels are costive, the compound tincture of tamarac will be found by far the best tonic and at the same time will fulfill other important indications.

When the retention is entirely mechanical, or produced by stricture in the urethra, bougies should be introduced, gradually enlarging them as the stricture is relieved, until the passage is sufficiently expanded to answer the purpose; or in some cases it may be desirable to cauterize the stricture, which is readily done with the *porte caustique*. In any case of the kind, a persevering application of measures will be necessary before you can expect relief. At the same time, to prevent a distention of the bladder beyond a safe degree, it may be necessary to draw off the water with a small-sized catheter, at least once, and sometimes twice or three times a day.

INCONTINENCE OF URINE.

This term is applied to that form of urinary disorders in which there is an inability to retain the urine during the ordinary period. The difficulty is found in very different degrees in different cases. In some the loss of action in the neck of the bladder is nearly or entirely complete, so as altogether to prevent the retention of the urine, which comes away with a constant stillicidium as it comes into the bladder. This is very apt to be the case in persons greatly advanced in life, in whom exists a partial palsy of the sphincter muscle of the neck of the bladder. Incontinence of urine may also depend upon irritation of the neck of the bladder, by which an inclination to discharge is felt as often as a very small quantity accumulates, and it also results from sudden frights and extreme mental emotions. These cases properly belong to other subjects, and are not intended to be included in the consideration of incontinence of urine as here understood.

By this term is more particularly understood that form of inability to retain the urine which is most common to children. It is sometimes also found in adults, but is generally observed to have attended them from childhood. In these cases the neck of the bladder retains its contractile power in a moderate degree, though not to the extent necessary to retain the fluid when it accumulates beyond a certain amount. So that, whether the individual is awake or asleep, it must be evacuated. During the waking hours of course it will be voluntarily discharged, but during sleep it passes away unconsciously, and the individual is subject to the inconvenience and mortification often attendant upon it. The development of puberty usually so modifies the susceptibilities of the system as to relieve the weakness of the neck of the bladder. But this is not always the case. This mainly grows out of want of attention and proper care at an early period, by which the habit of involuntary micturition may be restrained until the change referred to finally eradicates the difficulty. But from the inconveniences connected with it, as well as from the influence it may have on the future prospects of the child, it specially behooves every parent, having children who are afflicted with this weakness, to make use of every available means for its relief. The discharge sometimes comes on shortly after the child is put to bed, no doubt in this case brought on by dreaming; but most commonly it occurs later at night, after the fluid has accumulated to a considerable

amount, and the other sensibilities of the system not being equal to those of the neck of the bladder, the urine is discharged while the patient is wholly unconscious of its occurrence. From my observations on the subject, I have been led to think there is some truth in the tradition that it more frequently occurs while the child is lying on the back, than when in any other position. I have known children who would regularly have the discharge when lying on the back, while if care was taken to secure another position it was avoided. The excretion in most of these cases is more copious than is common to other children, and generally presents a more pale or light color,—though it is said to be more scanty than usual in some cases,—exhibits a far higher color, and is found to have a sediment upon cooling. In these cases I should be inclined to refer the difficulty to another cause, and not to consider it as a mere weakness, but rather as an irritation.

Treatment.—Very little can be expected from medicine while the child is allowed to indulge in the use of drinks to the extent usually desired in such cases. It should therefore be made a point to restrain the demand to a very small amount. It is also important to be careful not only to require the urine to be voided before going to bed, but also to rouse the child at the latest hour practicable, before the accumulation has taken place beyond the extent of toleration. At the same time, for the purpose of reducing the excess of fluids in the blood as much as possible, the surface should be freely bathed before going to bed, and the bathing followed by friction, to secure a free perspiration. If these measures are strictly attended to and persevered in, they will frequently succeed without the use of any other means. But if other remedies should be found necessary, or if it is not thought best to make use of the course suggested before resorting to internal medication, the most reliable are those that give tone to the general system, and arouse the action of the sphincter muscle at the neck of the bladder. *Tincture of cantharides* and *spirits of turpentine* are about the only medicines known at present that can be said to have any specific tendency to stimulate the neck of the bladder. The *tincture* should be commenced in small doses, and gradually increased until slight difficulty is felt in voiding the urine, when it should be suspended, and small quantities of mucilage of marsh mallows should be taken until it subsides. If it is commenced in full doses at first, you are liable to create an inflammation at that point that may not readily be controlled. It may be given to children in doses vary-

ing from ten to forty drops, and increased to a hundred, or until its specific effects are realized. The *turpentine* is given with similar expectations; it is not, however, quite so reliable and certain, though in some cases it affords relief without producing so much local irritation, probably by increasing the stimulating qualities of the excretion sufficiently to act on the bladder. This medicine should also be commenced in moderate doses and gradually increased until its effects upon the disease, or its local action can be observed. The general health should at the same time be particularly attended to, and such tonics and restoratives prescribed as may best subserve the indications presented in the case.

Where spinal irritation is found to have any influence in perpetuating the disease, the local measures recommended for other forms of spinal irritation should be used. Cupping, if necessary, counter-irritation with the irritating plaster, or the shower-bath with friction, the internal use of strychnia, and galvanism, may all be appropriate in different cases of the kind.

LECTURE LXV.

LOCAL DISEASES—CONTINUED.

Syncope: Definition; Symptoms; Causes; Diagnosis; Treatment. Asphyxia: From Drowning; Treatment; From Strangulation; Treatment; From Cold; Treatment. Angina Pectoris: Symptoms; Neuralgic Character; Causes: Peculiar Affection; Diagnosis; Prognosis; Treatment.

SYNCOPE, OR FAINTING.

This term is applied to that state of the system in which there is a temporary loss of consciousness and muscular motion, resulting from an inadequate supply of blood to the brain, on account of the weakened or depressed action of the heart. It is scarcely proper to consider syncope as a distinct disease, yet it is difficult to discuss it without treating it as such. Although a mere attendant upon other disorders, or a symptom produced by abnormal action, its separate consideration is rendered exceedingly proper by the character it frequently presents, and the importance often necessarily attached to it.

Symptoms.—It is usually accompanied, or rather preceded, by a painful but undefined sensation of faintness and exhaustion, though it is said sometimes to be a pleasurable feeling. The loss of consciousness is generally preceded by a sickening, sinking feeling, and accompanied by a dim or clouded vision, ringing in the ears, irregular respiration, a small, generally slow, and sometimes intermitting pulse, a blanched color of the face and lips, coldness of the extremities, frequently a tingling and numbness on the surface, and mostly a cold and clammy perspiration. These symptoms may occur without the supervention of complete unconsciousness, and may be mostly dispelled by a mere change of position. In some instances the system thus recovers, then sinks away again, and finally rallies without an entire syncope. It often, however, goes on increasing until the respiration is suspended, the action of the heart so far weakened—if not suspended for a time—as not to be felt at the wrist, and consciousness becomes entirely extinct. If,

however, the action of the heart is suspended, it can be so only for a few beats, as it can usually be heard upon careful examination.

In some instances syncope comes on suddenly, with scarcely any premonition, though generally individuals will afterward recollect a cloudy vision, and a weak and faint sensation, before total unconsciousness came on. It rarely continues long, though in some cases there are several successive fits of swooning. But cases are recorded in which patients have continued in this condition for hours and sometimes for days, if indeed those cases of trance or suspended animation so closely simulating death are rightfully placed in this connection. As the system begins to recover its action, respiration gradually returns, often beginning with sighs, the action of the heart becomes more apparent, the pulse can be felt at the wrist, the skin becomes warm, the capillary circulation restored, and muscular motion is again resumed.

The *causes* of syncope are various, though the immediate influence that develops it is a want of the stimulating or vivifying effects of a sufficient amount of blood upon the brain. This condition, however, is itself produced by a great variety of causes, so diverse in fact as to present in some cases an apparent contradiction of the proposition. Thus, peculiar odors are said to produce syncope in some sensitive systems; it has been known to follow offensive and painful sights; and the appearance of blood, or even the apprehension of a painful operation has brought it on in some cases. Severe injuries, such as blows, falls, and severe concussions, may produce it. The loss of blood from spontaneous hemorrhage or venesection, differing however according to the strength of different systems, is one of the most common causes of syncope. Flooding after delivery is a very frequent cause of fainting, aided no doubt by the shock experienced from the collapse necessarily attendant upon parturition. This view is clearly supported by the sequence of the same effects upon the sudden evacuation of dropsical accumulations without the loss of blood. It is also frequently produced by the erect position in cases of severe illness, and when it occurs after protracted fevers, while the vital forces are greatly exhausted, it occasionally proves fatal.

But syncope may occur in an opposite condition of the system, when the action of the heart is weakened by temporary depression of the nervous system. In this way no doubt it is occasionally produced by the direct influence on the nervous system of certain medicinal agents, such as prussic acid, tobacco, and others. The

relaxing influence of the hot bath, or exposure to intense heat, sometimes induces fainting. Authors mention as one of the most rapid and fatal instances of syncope, that which is produced by the sudden injection of air into the veins—a result very liable to occur in cases of transfusion, which is an operation having very little if any claim to favorable consideration. It is said also that syncope is produced by copious drafts of cold water when the system is relaxed from excitement or great heat. A heavy shock of electricity is enumerated as one of its causes, but I think it may be questioned whether this is not owing to the immediate paralysis of the great nervous centers, and the consequent direct destruction of life, rather than to the indirect influence of ordinary causes.

Diagnosis.—In most cases it will not be very difficult to distinguish the existence of syncope from other analogous conditions of the system. But asphyxia or apnœa may be mistaken for fainting without a just discrimination of the characteristics of each. In apnœa, the purple or blue appearance of the subject will sufficiently distinguish the case; as in syncope the countenance is pale or blanched with none of that venous congestion which always exists in asphyxia, from whatever produced. But the history of the case will usually furnish satisfactory distinctions, without any other aid.

It is frequently no easy matter to distinguish cases of prolonged or persistent syncope, in which the general manifestations of life are wanting, from cases of sudden death where the warmth of the body has not entirely disappeared.

But the most difficult and perplexing cases to determine, are those occasionally to be met with in which animation is apparently suspended, but some warmth still remains after a sufficient lapse of time to ordinarily mark the case as unmistakably fatal. I have met with a number in which the warmth continued far beyond the ordinary period, suggesting the suspicion that life was still latent and might return; yet no such results were observed, though in such cases I have uniformly advised delay in the interment. Cases do, without doubt, occur of reanimation after this apparent state of death has continued for a number of days. Whether a careful exploration would not detect a slight though weak action of the heart, is a question not perhaps fully determined. I think there can be no doubt that such cases would present appearances—perhaps not easily described—yet clearly indicative of the existence of some vitality, though quite latent or

nearly extinct. In these cases moreover there is invariably an absence of that cadaveric stiffness and rigidity universally peculiar to cases in which life is totally extinct. But always while the least doubt remains, no person of correct feelings would hesitate a moment in solving that doubt by retaining the body until unmistakable evidences of decomposition showed themselves.

You will occasionally meet with cases of a nervous or hysterical character, in which, either from a feigned or real state of the system, an apparent unconsciousness exists, with a very gentle and almost imperceptible respiration and a pale appearance of the face. But by careful observation you will be able not only to detect respiration but also to readily feel the pulse at the wrist, and by examination of the eyes the pupil will be found entirely sensible to the light.

Treatment.—The main indications in the management of these cases are to prevent, if possible, a complete state of syncope, or to arouse the flagging energies of the system to a state of action and sensibility, and during the intervals to prevent, by counteracting the causes, the tendency to a recurrence.

The first step to be taken in all cases, whether the system is in a state of complete insensibility or only tending to it, is to place the patient without a moment's delay in a horizontal position. No time should be lost in making preparations for this purpose; but, if a bed or a lounge is not at hand, the patient should be laid upon the floor, and should remain there until evidences of reaction appear, or until other preparations can be made for the more comfortable and convenient management of the case—being careful, in case of removal, to preserve the horizontal position. A complete syncope can generally be prevented by taking this position as soon as the first evidences of its approach are observed, and it is also indispensable for the restoration of the patient when the attack is complete. When the attack has come on suddenly, without any previous exhaustion of the system, such as frequently follows the sight of blood, the extraction of a tooth, or any other trivial cause, it will only be necessary to remain in the horizontal position until consciousness is restored and the ordinary physical strength has returned, when the erect position should be *gradually* resumed, and not all at once. When, however, the attack is produced by profuse hemorrhage or exhausting causes, it may be necessary to keep the recumbent position for a number of days.

Whether the syncope be complete or only threatened, the next thing to be attended to is to remove any embarrassment to the

free circulation of the blood, by unfastening the clothes, loosening the garters, and carefully removing every impediment to the free capillary circulation, which should also be aided by brisk friction, by the dispersion of all unemployed and useless bystanders, and the admission of abundant fresh air through opened doors and windows.

Measures should then immediately be taken to rouse the nervous energies. If the system is not so far gone as to prevent the use of internal remedies, a small dose of the tincture of camphor, or, if convenient, a drachm of the sudorific tincture may be given; and in cases attendant upon the exhaustion of the system, the excitement may be kept up by a solution of ammonia or diluted spirits. At the same time volatile and stimulating substances, such as camphor, musk, ether, etc., may be applied to the nose, thereby directly exciting more active respiration and thus giving an impetus to the circulation, while the face and chest may be freely bathed with the same. The body should be kept warm with appropriate clothing, and hot bricks and the like applied to the extremities.

If however it is a case of complete syncope, internal remedies can not be administered, and you will therefore have to rely upon the position and all the other external appliances appropriate to the case. In addition, a course of more general and thorough friction should be instituted; if the insensibility is persistent the blaze of a candle may be blown upon the skin with a blowpipe over the whole length of the spine. Injections of turpentine in small quantities may be tried, as well as the remedy said to be suggested by Dr. Cartwright of slapping the surface with a lady's slipper, in place of which I would suppose that a small bunch of elastic switches would be more efficient. In the event of all these measures failing, electricity may be tried, the lungs may be inflated as for asphyxia, and a powerful stimulant may be thrown into the stomach by the aid of the stomach-pump and elastic tube, such as brandy toddy, or a solution of ammonia or camphor, etc.

The measures best calculated to prevent recurrence of syncope are such as will give tone to the general system, and allay the invariably attendant excessive irritability of the nerves. General tonics, such as the gin bitters, etc., and the decoction of cypripedium and scutellaria, may be mentioned as among the best remedies of which I have any knowledge. It will be necessary to regulate the habits properly both in respect to diet and exercise.

ASPHYXIA.

I propose in the present and one or two following lectures to call your attention to the consideration of a number of diseases which, from their comparatively rare occurrence, may be ranked as of minor importance. And in discussing them I shall not detain you by going at any great length into the theories which have been or may be offered by way of explaining them. It must suffice our purpose briefly to indicate the nature of each difficulty, and the treatment appropriate to each.

And first of asphyxia. The *literal* meaning of the term differs from that in general use, the former being the loss or cessation of arterial pulsation, while the latter is a suspension of the functions of respiration. Every body is supposed to know that atmospheric air is indispensably necessary to respiration, and that any circumstances which either mechanically obstruct its ingress into the lungs, or substitute it for any considerable length of time, are fatal to human life. Without stopping to discuss the theories of respiration or the particular effects of atmospheric air in this function, I shall proceed at once to consider the causes of this affection or obstruction, and the best methods of affording the most prompt relief. Whatever circumstance may give rise to the difficulty, whether strangulation, drowning or poisonous gases, the resulting effect is probably the same, to-wit: the deprivation of oxygen and the consequent cessation of its vitalizing influence upon the blood. And the remedies to be applied are essentially the same, with such slight modifications as each case necessarily requires. For the sake of perspicuity I shall consider separately the phenomena and treatment peculiar and appropriate to the different cases.

1. *Asphyxia from drowning.* If the case is recent, the sufferings produced by drowning will be visible in the countenance. Beside this, a frothy mucus, sometimes slightly colored with blood, will be seen about the mouth, and upon dissection a similar substance will be discovered throughout the large bronchial tubes. More or less water will generally be found partially filling the lungs. The right cavity of the heart and the large venous trunks will be highly gorged with dark blood. This however will not be the case when the respiration has been arrested by fainting or otherwise before the submersion of the body.

The period during which the body can remain under water without a total extinction of life, is a question of some practical

importance, since upon its determination may depend the continuance of our efforts at restoration. It is however one of those questions which does not admit of a precise and definite solution. But cases of so extreme a character have occurred that it behooves every physician, when the occasion requires, to continue his efforts for even a considerable time after all signs of animation have disappeared. The ability to remain under water varies of course in different persons, and depends chiefly on the constitutional vigor and tenacity of life peculiar to each individual, as well as upon the greater or less exemption from pulmonary derangement. From two to six minutes submersion may, perhaps, be considered sufficient to render resuscitation doubtful. Yet there are not wanting instances of considerable variance from these limits. The extreme cases mentioned by the authorities require the supposition of a very different state of the system to that which is ordinarily found to exist to render them credible or even possible. Upon the supposition of syncope before submersion, the body *might* be tenacious of life under water as long as it could be when otherwise situated. It is quite manifest, therefore, that those persons, reported by the authorities as having been submerged for half or three quarters of an hour, must necessarily have been previously in a state of syncope, or some similar condition. It is clear that this might occur, since there is scarcely a doubt that death, in cases of drowning, results from the deleterious influence of the carbon retained in the circulation, and as the circulation is arrested in the state of syncope, the blood of necessity ceases to acquire that deleterious property. While, under other circumstances, the action of the heart continues until the blood has become loaded with this poisonous element, the lungs cease to perform their function, the brain is embarrassed for want of its appropriate stimuli, and a powerful struggle immediately follows.

[I think it more nearly correct to attribute the suddenness of death in drowning to want of oxygen. Atmospheric air being excluded from the lungs, the circulation of the blood is there arrested, causing the arterial side of the circulatory system to become empty, and consequently depriving the nervous centers of oxygenated blood. It is probable that the congested state of the venous system contributes also to the depression of the nervous centers, and thus hastens the fatal result. S.]

In the *treatment* of these cases little or no medicine is necessary.

But it is as important to know the proper course to be pursued as in other difficulties. The most reliable measures are the application of dry heat, and artificial respiration. After the patient is entirely divested of the wet clothes, he should be placed in bed between warm blankets, bottles of hot water or hot bricks should be placed at the feet and extremities, and brisk friction with heated flannel applied to the whole surface. The sides of the chest should be compressed for the purpose of giving action to the lungs by expelling any air that may remain in them, and thereby arouse the latent vital spark. If these efforts are not soon successful, the lungs should be inflated, and then again in the sides of the chest forcibly pressed upon, in order to imitate as far as possible the contraction and expansion of the lungs. Various methods of inflating the lungs have been proposed, either of which will answer the purpose. The most convenient way, perhaps, is for a person who has strong and healthy lungs to place his mouth just within the patient's lips (whose nostrils should at the same be firmly compressed), and by a gradual and forcible effort inflate his lungs, while an assistant follows this effort with heavy manual pressure upon the sides, thus expelling the air by producing contraction of the chest. This alternate inflation and compression, waiting a few moments between each effort, should be continued for half an hour or more, where evidences of returning animation do not sooner show themselves. Another method, and perhaps the most reliable when the instrument can be readily obtained, is to use a small hand-bellows instead of the breath, which should also be alternated with pressure upon the sides. Whatever method is selected, care should be taken to avoid a too sudden expansion of the air-vesicles, which might rupture the air-cells and thereby produce emphysema of the lungs. [Unless measures are employed to keep the tongue forward and the epiglottis erect, all such efforts are much more likely to inflate the stomach and bowels than the lungs. See note at the close of this subject. S.]

These measures may be seconded by throwing up the bowels stimulating injections such as a teaspoonful of the compound tincture of capsicum mixed with a teacupful of warm water.

2. *Asphyxia from Strangulation.* The only cases of this kind in which you will ever be likely to be called on for medical services will be those of attempted suicide. The attempt being usually made with a handkerchief, or cord, the marks will generally be visible on the neck, though less so when strangulation is attempted

without suspension. If no further violence has been done than tightening a ligature sufficiently to produce strangulation, and especially if that be by a folded handkerchief, the marks of compression will shortly disappear upon the removal of the ligature. In such cases great turgescence of the veins will be observed, and appearances indicative of apoplexy will be particularly marked. In fact the apoplectic condition of the brain will be, in some rare cases, the immediate cause of the fatal result. This, however, occurs only when, from the arrangement of the cord, or from ossification of the larynx, complete occlusion is not produced. But when the obstruction to respiration is perfect, and the blood ceases to be vivified by the influence of atmospheric air, the immediate cause of death, it can scarcely be doubted, is very similar to, if not identical with, that of asphyxia from drowning. In cases of criminal executions by hanging, the weight of the body in the fall produces instantaneous dislocation of the neck and consequent injury of the spinal marrow. The terrible shock given to the nerves entirely paralyzes the whole system and results in death.

It is evident that the lapse of time, between asphyxia from strangulation and the entire extinction of life, must vary greatly according to the circumstances of each case. Thus dislocation of the cervical vertebra extinguished life almost instantly, with scarcely a struggle, and probably with very little suffering. When the larynx is entirely closed without injury to the spinal cord, the fatal result is not so immediate, comes from a different cause, and is undoubtedly accompanied by intense suffering and agony. When there is only an obstruction of the venous circulation without a complete arrest of the respiratory movement, life may be prolonged for a considerable time and the subject finally recover. Instances are mentioned where, ossification having prevented occlusion of the larynx, the subject has been found alive after hanging all night, and others from like causes have survived a number of hours. A singular fact is mentioned by the authorities in connection with strangulation by hanging. It is said that there is often an excited condition of the genital organs—erection of the penis and seminal discharges. Various explanations have been given of this occurrence. But none it occurs to me are satisfactory or physiological that do not place the paternity of the genital function at the base of the brain. The symptoms in these cases are, face always turgid and swollen, eyes open and prominent and

the vessels of the conjunctiva injected, the mouth open and, often, the tongue protruding.

Treatment.—Those cases suffering the penalty of the law by hanging are not legitimate subjects of medical skill, and if they were there would be rare occasion for it, as this mode of execution almost always produces dislocation of the neck and immediate death. It is only in cases of attempted self-destruction, or possibly accidental strangulation, that you will be called to interpose your skill to restore suspended animation. In reference to which, Dr. Wood says, “the only measure requiring attention is the abstraction of blood.” This it occurs to me is a most singular prescription. We have a subject to all appearances dead; the circulation completely arrested, the respiratory function suspended, and animation perfectly gone; all resulting from want of those changes produced in the blood by the action of the atmosphere during the respiratory process. It is certainly difficult to perceive the philosophy of that direction, in view of the cause of the difficulty, even if it were possible to draw blood. But we are met at the very commencement of the operation by the impossibility of filling a vein, because the circulation is suspended, and, if we should open a vein, but a few drops at most would be discharged; not enough to make the least impression on the circulation, and of necessity productive of no influence on the nervous system. Moreover if blood *could* be obtained by opening a vein, would it not be more reasonable to ply our remedies to remove the cause, and thereby change the condition of the blood? Let it be remembered that the cause of the difficulty is obstruction in the respiration, and failure of the circulation of the blood from deprivation of oxygen. The asphyxied condition is the immediate result of this state of the blood, and by exciting the respiratory movement the oxygenation of the blood will immediately commence, and will be perfected just as soon as the whole mass of the circulation has been brought properly within the influence of that important renovating function.

But admit that the compression of the veins has been disproportioned to that of the arteries, by which an undue quantity of blood has been retained in the vessels of the brain, and further, for argument's sake, that serious lesion might result to that organ before the change referred to would be perfected, unless some measure is instituted to relieve the engorgement; is bleeding the best, most safe, prompt, and reliable remedy? On this question I have no

doubt. If the head is hot, a few cups applied to the temples or back of the neck, bathing with warm water, and gentle fanning, will usually be sufficient to answer the purpose. If, however, the case presents appearances of a more grave character, with strongly marked symptoms of venous congestion in the brain, ligatures to the extremities will answer all the purposes, and be equally as prompt and efficient as general blood-letting. It should be remarked that these measures, if necessary at all, will be so only after the respiratory and circulating functions have been restored by the use of the same means as prescribed for asphyxia from drowning or submersion, such as artificial respiration, external stimulation, friction, dry warm clothing, stimulating injections, etc.

3. *Asphyxia from Extreme Cold.*—The effects of cold upon the functions of animal life are similar to those we have been considering. After the painful feelings consequent upon the first action of cold, the sensations next felt resemble those resulting from the inhalation of carbonic acid gas. The patient experiences a benumbing influence upon the whole system, indicative of cerebral oppression, producing a careless indifference to the danger of his situation; an enervated state of the muscular system, manifested in the irregular and tottering step, imperfect and indistinct articulation, and manifest drowsiness; showing an impression upon the great nervous centers similar to that operating through the medium of the circulation. As these morbid influences increase, the respiration becomes irregular and slow, the muscular powers fail, and the patient sinks into a state of insensibility and death. The venous trunks, the ventricles of the brain and the right cavity of the heart are found, upon post-mortem inspection, filled with dark venous blood, while all the symptoms during the progress of the case show most clearly that the first effect is a partial paralysis of the nervous system, affecting the aeration of the blood, similar to the influence of other causes acting more directly upon that fluid, such as noxious gases, etc.

Treatment.—The leading indications in asphyxia from cold are essentially the same as in other cases. The only difference in the measures to be employed grows out of the relative temperature of the two conditions, though the relative amount of heat applied in each case is nearly the same. In asphyxia from cold, the surface should be rubbed with snow if practicable, or the whole body may be submersed in cold water for a short time. These applications, though positively cold, are not so cold as the parts to which they

should be applied. This fact should be borne in mind, and the applications gradually increased in temperature until the surface approaches a natural state, or the muscles and articulations acquire a degree of relaxation which will admit of free motion, when artificial respiration should be resorted to.

Thus it will be observed that, whether asphyxia results from ligatures to the larynx or mechanical obstruction from tumors compressing that tube; or from interruption of respiration from submersion in water; or the application of intense cold to the whole system; or respiration of carbonic gas; its proximate cause is identically the same, to-wit: the want of the proper oxygenation of the blood. And this proves beyond a doubt that, though the continued action of the heart or the circulation of the blood is indirectly dependent upon the functions of respiration and the changes wrought on the blood by that process, yet it does not, as has been supposed by Mrs. Willard and attempted to be proved by Dr. Cartwright, find its motive power in the lungs, any more than the functions of the liver or any other secretory and depurating functions of the body, are directly dependent upon respiration for the proper performance of their actions.

Let us examine this doctrine for a moment, since it is receiving its full share of attention in other quarters. The proposition, if I understand it, as laid down by Mrs. Willard and magnified by Dr. Cartwright, is that the "chief motive power" of the circulation resides in the lungs instead of the heart. The experiment made by Dr. Cartwright on the crocodile, of suspending animation by ligating the trachea of that cold-blooded animal, and resuscitating it by inflating the lungs, has, in all its physiological and pathological phenomena, except the vivisection, a most perfect parallel in the different varieties of asphyxia produced by the dissimilar remote causes that we have been considering. Nor does the parallel stop here. The same measures that were resorted to and are so triumphantly heralded as having restored lost animation to the "sacred saurian," are those alone upon the use of which you can calculate for success in all forms of asphyxia.

Now these facts were known to the world long before the theory referred to had its advent, and were supposed to depend on the aëration of the blood and the generation of caloric, partly by the mechanical action produced in the lungs by insufflation, partly and mainly by the combination of the carbon of the blood with the oxygen of the air inhaled. The explanation, it is true, did

not attach so much importance to the influences of the oxygen of the atmosphere thus introduced, as to suppose the "motive power" thus developed was the sole agent necessary to the circulation, or that the blood thus changed and put in motion either by the mechanical, chemical, or vital influences imparted to it, acquired the sublime properties of sensibility and thought. Undoubtedly the impetus given in the first instance to the capillary circulation by the vivifying influence of the atmosphere is a fact of vast importance, but I am unable to perceive wherein so much practical good is to result to the world from the announcement of the supposed "discovery." Surely there is nothing new in the theory that a large amount of free caloric is the invariable result of respiration, and that a motive power, produced by the expansive quality of heat, is more or less operative in the phenomena of resuscitation in cases of asphyxia. Nor is it new that the first in the series of changes, effected by the influences referred to, is more or less movement of the blood in the capillary vessels of the lungs. And it should not be overlooked that at this stage of the restorative process, the emptied condition of the vessels, going to that portion of the heart, itself furnishes a satisfactory explanation of the movement upon a well known principle of hydraulics. It is also true that the vivification of the globules of the blood by the chemical changes of oxydation develops in them a latent motive principle, which will in part explain the movement observed by Dr. Cartwright in the capillary vessels of the exposed lung of the asphyxied crocodile. Moreover, the principle, known in philosophy as capillary attraction, and proved by Magendie to have an important influence on the circulation of blood in those minute tubes, should not be overlooked in accounting for the changes which take place under the circumstances we are considering.

There was nothing in the experiments performed by Dr. Cartwright and others upon the saurian subject which developed any fact not previously known to the profession, unless we except the fact that this species of the animal creation would bear a mutilation which many others would not, and could be resuscitated from a state of asphyxia after the lapse of a much longer period than can be endured by the human species. Beyond this the experiments present no practical truth bearing on the science of medicine, which was not as fully established by every case of asphyxia from any of the causes heretofore enumerated.

The cases cited, of animals having no heart, to prove that the

motive power of the blood exists in the respiratory function, and the cases wherein the lungs were wanting, as well as the case of the fetal circulation in utero, cited to disprove the proposition, all equally leave the question where they find it, without affording an objection one way or the other. In both instances an apparatus is admitted to exist answering the purposes usually supplied by the organs which in such cases are deficient.

But suppose the theory that the motive power of the circulation resides in the lungs and is derived from respiration, to be correct, what are its claims for consideration in a practical point of view? Dr. Cartwright says: "Before the science of medicine can make much progress, or lend its all-important aid to a general and rational system of education—physical, moral and intellectual; before consumption, the bane of the progressive race of mankind, can be prevented, and the term of human life lengthened; and before the north and south can be indissolubly united in the bands of perpetual amity and fraternity, * * the motive powers of the circulation of the blood must be apprehended!" It is truly wonderful! And not the least remarkable feature connected with this new "discovery" is, that neither Mrs. Willard nor Dr. Cartwright, with all his astuteness and acknowledged capacity for metaphysical research, has been able to see, what everybody else sees, that the only discovery which has been made in the premises is a theory!

[As the prompt and successful treatment of asphyxia is a matter of so much importance, I deem it proper to subjoin the rules announced by Marshall Hall, for what he designates "*The Ready Method*," from the London Lancet, February, 1857, page 148.

"It will be obvious to all, that our main objects are—to renew respiration and improve the circulation. Our *means* are physiological and physical; our *RULES* as follow:—

"All obstruction of the glottis being removed by placing the patient in the *prone* position, in which any fluids and the tongue itself fall forward (*Rule I.*), our *first* effort is to *excite* respiration physiologically (*Rule II.*); our *second*, if this fail, is to *imitate* the acts of respiration mechanically (*Rule III.*); our next object is to endeavour to improve the circulation, which is done by promoting the flow of the venous blood, and to restore warmth, in the limbs (*Rule IV.*); we again, as we proceed, revert to the physiological principle of *exciting* respiration from time to time (*Rule V.*).

“R U L E S .

“1. Treat the patient *instantly, on the spot*, in the *open air*, freely exposing the face, neck and chest to the breeze, except in severe weather.

“2. Send with all speed for medical aid, and for articles of clothing, blankets, etc.

“I. To Clear the Throat,—

“3. Place the patient gently on the face, with one *wrist* under the forehead;

[all fluids and the tongue itself then fall forward, and leave the entrance into the pipe *free*].

“II. To Excite Respiration,—

“4. Turn the patient slightly on his side, and

(i.) Apply snuff or other irritant to the nostrils, and

(ii.) Dash cold water on the face previously rubbed briskly until it is warm.

“If there be no success, lose no time; but,—

“III. To Imitate Respiration,—

“5. Replace the patient on his face;

“6. Turn the body gently, but completely, *on the side and a little beyond*, and then on the face, alternately; repeating these measures deliberately, efficiently and perseveringly, fifteen times in the minute, *only*;

[when the patient reposes on the thorax, this cavity is *compressed* by the weight of the body, and *expiration* takes place; when he is turned on the side, this pressure is removed and *inspiration* occurs].

“7. When the *prone* position is resumed, make equable but efficient *pressure along* the spine; removing it immediately before rotation on the side;

[the first measure augments the *expiration*, the second commences *inspiration*].

“IV. To Induce Circulation and Warmth,—

continuing these measures:

“8. Rub the limbs *upward*, with *firm pressure* and with *energy*, using handkerchiefs, etc.

“9. Replace the patient's wet clothing by such other covering as can be instantly procured, each bystander supplying a coat or a waistcoat.

“Meantime, and from time to time,—

“ V. *Again,—to Excite Inspiration,—*

“10. Let the surface of the body be *slapped* briskly with the hand; or,

“11. Let cold water be *dashed* briskly on the surface previously rubbed dry and warm.

“The measures formerly recommended and now rejected by me are,—removal of the patient, as involving dangerous loss of time; the bellows, or any *forcing* instrument, and the warm bath, as positively injurious; and galvanism and the inhalation of oxygen, as useless.

“The inhalation of dilute pure ammonia has in it more of promise.

“For the treatment of stillborn children, excitement of the skin, the alternate cool and hot bath (the temperature being 60° and 100° Fahr.), postural respiration, and rubbing with pressure upward, are *the* remedies.”

Numerous cases of drowning and of asphyxia from other causes are reported in the medical journals as having been treated successfully by this method. S.]

ANGINA PECTORIS, OR STERNALGIA.

I can not doubt that the affection usually described as angina pectoris, and styled by some authors neuralgia of the heart, is in truth a nervous disease, having its origin or seat in the roots of the spinal nerves, or in the cervical ganglia, and as I shall hereafter discuss the subject of spinal irritation more at large, I will not now detain you very long on this affection.

The *symptoms* enumerated by most respectable authors as characteristic of this disease most clearly confirm the view of its nervous character which I have taken, and which daily experience indubitably shows to be correct. They may be briefly stated :

Severe pain in the left arm and left side of the chest, sometimes extending to the right side, right arm, neck, lower jaw and ear, and occasionally to the lower extremities. The pain generally originates in the chest and extends to the arm where the pectoral and deltoid muscles are inserted, and in some cases reaches the forearm, wrist and fingers, following the course of the ulnar nerve. Occasionally the pain originates in the arm. In females there is apt to be great tenderness of the breasts, especially of the left breast.

The pain is often attended with dyspnœa, or at least a sense of thoracic oppression, though the lungs present no physical signs of disease.

The pulse is usually small, weak and unsteady, though in some cases it is normal, in others full and strong.

The stomach is apt to be distressed by pain and flatulency, if not by nausea.

Where the symptoms take so wide a range as those just enumerated, they evidently refer us to the spinal axis as the seat of irritation.

As, however, the disease occasionally presents phenomena not altogether referable to spinal irritation, and requires some special attention unconnected with that disorder, a few remarks on the subject may not be out of place. Those cases which present evidences of local distress in the region of the heart, with other signs of cardiac disorder,—although the phenomena of organic disease may be wanting, and although irregular paroxysms may alternate with intervals exempt from both the local and general symptoms usually enumerated as characteristic of angina pectoris,—are yet, undoubtedly, cases of nervous affections of the heart. Having their remote origin in a highly exalted state of the sensibility of the cardiac nerves, they are liable to be developed by trivial causes operating on the circulation or the nervous system.

This neuralgic affection generally manifests itself in paroxysms of longer or briefer duration and at irregular periods. The attacks are usually mild in the beginning, but are apt to become more and more severe as they are repeated, and to be separated by shorter periods until the sufferings of the patient are very severe and nearly or quite constant.

A severe paroxysm may terminate in convulsions, or fatal dyspnœa, though this rarely occurs. But after the disease has existed a long time, and the pain has become almost or quite constant, syncope becomes frequent in some cases, and at last proves fatal. In such protracted cases the valves of the heart are apt to become impaired.

Sometimes a single paroxysm or several paroxysms at irregular periods are experienced by individuals, who subsequently enjoy entire immunity from the affection. Others are subject to slight or perhaps severe pain in the left side whenever they make any considerable muscular effort, or become mentally excited, in whom the affection never assumes any graver form than this.

Another peculiarity, to which I desire to call your attention, is that form of the disease presenting the regular periodical symptoms peculiar to neuralgic affections in general, and produced no doubt, by the widespread and pervading influence of malaria. In this case, the symptoms of angina pectoris will return at regular and stated periods, either every day, or every second or third day, coming on very gradually, and increasing for a time, until the distress of the patient reaches the highest point of endurance, then gradually subsiding, and finally leaving the patient free from any symptoms of disease, except a feeling of weakness consequent on the intense suffering just endured. The pulse, in these cases, will be somewhat irregular, sometimes slower than natural, and at others very rapid. In some cases febrile symptoms will be manifest, with a warm, dry skin, but a light-colored urine, etc.; while in others, a cool skin and coldness of the extremities will characterize the paroxysm of suffering throughout. The pain in such cases will be mainly confined to the region of the heart, but will be accompanied by great restlessness, irregular respiration and sighing, and in some cases, great oppression and difficulty of breathing.

Causes.—The inference is obvious from what has already been said, that any circumstances calculated to increase the irritability of the heart are liable to develop this disease. Thus any extraordinary muscular effort in irritable constitutions, such as rapidly ascending a hill or a flight of stairs, hard lifting or severe tusseling, will produce it. It is liable to follow gouty and rheumatic disorders, is almost peculiar to advanced life, and is more common among males than females. It is frequently associated with, and no doubt produced by, organic diseases of the heart, and the symptoms growing out of it are among the most distressing and severe of any connected with those affections. But that form of the disease presenting the distinctly periodical character can be scarcely supposed to result from any other cause than that which produces other similar disorders, which is generally conceded to be vegetable malaria. The phenomena of the disease, as well as the results of treatment, point alike to the identity of the cause in this affection with that of intermittent and remittent fevers.

Diagnosis.—Affections of the heart are generally characterized by well defined and unmistakable symptoms. But it is difficult sometimes to distinguish between the symptoms of organic and functional disorders, and nothing but the closest scrutiny will obviate the difficulty. Yet the absence of the physical symptoms which

are brought to light by auscultation and percussion, and which I have heretofore considered, will enable you to decide without much doubt. So that where evidences of cardiac disease present themselves, and upon a careful exploration, symptoms of structural disease can not be recognized, we are justified in concluding the disease to be a mere nervous or functional one.

Prognosis.—The functional affection which I have been considering rarely proves fatal, and with proper care and appropriate treatment may generally be relieved. While those cases complicated with structural diseases of the heart of an aggravated character can scarcely hope to be cured.

Treatment.—The treatment of the two modifications of the disease which I have presented may with great propriety be divided into the palliative and radical, or in other words embraces those measures adapted to *relieve* the paroxysms, and those necessary to prevent their recurrence. In that form of the disease dependent upon neuralgic irritation, in which a highly excited and phlogistic state of the system is found to exist, an active course of treatment will be necessary. In addition to the anodyne and antispasmodic remedies necessary to relieve the immediate sufferings of the patient, cups should be extensively applied over the region of the heart, with scarification if necessary; and if the bowels are loaded, as they often are in these cases, a speedy hydragogue cathartic should be administered, and its action favored in due time by the aid of injections. The compound powder of senna and jalap with cream of tartar, will answer this purpose better perhaps than most other remedies of this kind. The most suitable anodyne and antispasmodic preparation is probably the compound tincture of Virginia snake-root, given in drachm doses, and repeated every hour or two according to the urgency of the symptoms, until the sufferings of the patients are relieved. This preparation combines anodyne and diffusible stimulating properties in such proportions as to render its use appropriate in almost every case of the kind. Even in cases presenting decidedly inflammatory symptoms, its action in equalizing the circulation, determining to the surface, and producing free perspiration, far overbalances any effect it may have on the action of the heart, while as an anodyne few remedies of the class equal it.

But in cases of a pale exsanguineous condition, the purgatives, and even the cupping should be omitted, except a few dry cups may be thought advisable, while the anodynes, combined with a

decided stimulant, should be repeated until relief is obtained. These measures in many cases may be aided by hot pediluvia, which may be rendered more effective by the addition of mustard or Cayenne pepper, and the application of extensive sinapisms over the region of the heart, and to the spine. The latter remedy, premising with cups and scarification to the spine, should be applied if irritation in the roots of the spinal nerves is thought to exist; and this may be almost taken for granted if a gouty or rheumatic state of the system is known to have characterized the case. When there are accumulations in the stomach, the first indication would be an emetic.

In the radical treatment of cases dependent on irritation of the cardiac nerves and cervical ganglia, the causes ascertained to be instrumental in exciting or producing the attack should be most studiously avoided; otherwise all curative measures will be of little avail. The causes therefore should be particularly inquired into, and satisfactorily determined, before you can prescribe with any certainty of success. The general health of the patient should also be attended to, as the most effectual mode of permanently removing local disorders. It is hardly necessary to repeat the particular directions adapted to this purpose; but while they are properly attended to, it may be advisable to make use of some local measures calculated to divert the irritation, and thereby remove the susceptibility to attacks from slight causes. The compound tar or irritating plaster may be applied over the heart, and one also to the spine, and continued until a free discharge is procured. The whole surface may be bathed in cold water, warm weak ley, or whisky and water, as may seem best for the case, while exercise in the open air, to the extent of the patient's strength without fatigue, should be particularly recommended. The diet should receive attention, as the majority of patients in these cases are more or less the victims of indigestion from excesses of various kinds, especially in eating, and therefore require special instructions as to the kind and quantity of what they may be allowed to eat.

Cases exhibiting the periodical character already described should be treated mainly in the same way you would treat a case of intermittent fever, palliating with such measures as I have recommended for other modifications, during the paroxysm, and after it has passed off administer quinine and iron in such quantities as shall secure the system against a recurrence of the attack. The

time for its administration will depend somewhat upon the paroxysmal character or type of the disease. If the paroxysms recur every day, the quinia and iron should be commenced so as to administer fifteen or twenty grains of each, in three-grain doses every two hours, before the expected period of its recurrence, and about two hours before that time the patient should be advised to go to bed, and take a teaspoonful of the compound tincture of Virginia snake-root in warm tea, and in an hour and a half to repeat the dose. In this way you may calculate with great certainty upon preventing the paroxysm, and thus cure your patient. It may be necessary in this, as in most other intermittent affections, to guard against periodical recurrences, when the patient resides in a malarious region. The measures heretofore recommended for intermittent fever will be equally applicable in this affection.

I might have remarked before, that the other types of the disease require the same medicines, only they may not be administered so soon after the decline of a paroxysm ; but in every other respect the course is the same.

LECTURE XLVI.

LOCAL DISEASES—CONTINUED.

Anæmia, or Chlorosis: The subject limited; Distinguished from Puerperal Anæmia; Symptoms of Chlorosis; Symptoms of Puerperal Anæmia; Causes; Prognosis; Treatment.

ANÆMIA, OR CHLOROSIS.

That condition of the system, formerly designated by the terms *chlorosis* and *green sickness*, is considered by modern authors to be more appropriately styled *anæmia*. By these terms is understood a morbid condition of the blood and especially a deficiency of its vital constituents.

In this connection I shall not consider those accidental aberrations from the normal state of the blood produced by its abstraction or by hemorrhages, nor those cases in which it becomes sensibly deficient from the effects of ordinary acute diseases. The condition of the blood in such cases is a natural consequence of protracted disease, and when the acute affection is removed a remarkable ability and tendency to repair is generally shown. The division of this disease into acute and chronic, as made by some authors, I therefore look upon as unnecessary, since that form described as acute is sufficiently considered in treating of convalescence in most acute diseases.

But there is a *distinction* which my experience has shown to be of great practical importance, and by attention to which, if I am not greatly mistaken, a number of valuable lives have been saved. The distinction to which I desire to call your attention is the difference between that form of this disease which was formerly designated by the term *chlorosis* or *green-sickness*, and which chiefly affects young females, though not confined to them, as it is occasionally met with in married women, and sometimes in men—and that other and far more common form connected with the *puerperal state*. The general appearances and most of the symptoms seem to be very much the same in these forms, but the

results of treatment and the attendant circumstances have impressed my mind with the conviction that, though they both may be connected with the sexual functions, yet future research will determine them to be different diseases.

[The *symptoms* and pathology of general anæmia are given in my lecture on that subject, Vol. I., page 108, et seq.

Chlorosis.—That variety of anæmia usually denominated *chlorosis* or *green-sickness*, most frequently occurs in girls between the ages of twelve and eighteen years. Its approach is denoted by habits of languor, listlessness, inertia, and melancholy; the patient becomes taciturn, irritable, and nervous; she frequently sighs unconsciously as if in mental distress, and very trifling incidents of real or fancied annoyance often cause her to shed tears; her face loses its natural expression, becomes pale and in many cases bloated; the eyelids are swollen, especially after sleep, and are encircled by a brown-colored areola; the eyes are lusterless and sad; the lips are pale; the skin dry and cool, especially on the extremities; the pulse is frequent and feeble,—though in some cases it is somewhat full and harder than in health,—and slight exertion greatly increases its frequency; respiration is difficult, and the breath bears an offensive odor; the patient does not fill her lungs in ordinary breathing, but can do so perhaps when requested; the appetite is capricious, sometimes failing, sometimes voracious, and often fastidious in regard to articles of food; digestion is deranged; the bowels are irregular, with a predominating tendency to costiveness. As the morbid condition progresses the patient loses strength and becomes more and more nervous; attacks of palpitation, of drowsiness, and, in some cases of hysteria, are frequent; she loses all capacity for the enjoyment of society, and her life becomes a burden to herself, and her condition a subject of constant and intense solicitude to her friends.

If the disease is allowed to run its own course, the symptoms above mentioned become more and more aggravated, and others make their appearance. The patient is afflicted with vertigo, tinnitus aurium, and dimness of vision; headache, and neuralgia in different regions of the body; disorder of the motor functions in the form of chorea, hysterical epilepsy, etc.; dropsical infiltration in the tissues and cavities; diarrhea; hectic fever, with daily exacerbation; and rapid emaciation. The skin passes from the pale into the greenish-sallow hue, the lips become purple, the functions

gradually fail, and the patient at last is released from her sad condition by a sudden and painless death.

The chlorotic state is uniformly preceded and attended by uterine disorder. In most cases there is a failure in the establishment, or else a subsequent suppression of the menstruæ. In some cases, however, the menstrual discharges continue, but are irregular, deficient, or too profuse and too long continued; are attended with pains in the loins or in the pelvis, or both, and instead of affording relief, only tend to increase the nervous disorder and mental depression. The menstrual fluid, in cases where the catamenial function has been commenced and is continued, is pale and watery, merely stains the linen perhaps, or produces spots which lose their color on drying. Leucorrhœa is nearly always present, and sometimes the discharge is very abundant.

The *diagnosis* between chlorosis and ordinary anæmia depends chiefly upon the condition of the menstrual function. Anæmia may occur in either sex, and is not peculiarly incident to any period of life; but chlorosis is confined to females, and chiefly to the period between puberty and maturity.* Chlorosis is usually slow in its progress, and its immediate cause is often beyond discovery; whereas ordinary anæmia may almost always be traced to some adequate cause, comes on more suddenly, and tends to a more speedy recovery when the exciting cause ceases to operate. S.]

Puerperal Anæmia.—The *symptoms* of this modification of anæmia sometimes appear previous to confinement, and gradually, though not rapidly, increase, until that period when, if the system does not rally from the shock given by that change, all the symptoms rapidly become worse, and the patient sinks unless appropriate treatment is timely interposed. But more frequently they do not appear until after confinement, in some instances immediately or within a few days, but in others some weeks and even months elapse before the characteristic evidences of the affection will be observed, though throughout the patient's health is generally delicate and infirm.

The disease comes on so gradually, and often makes its inroads so insidiously, that the presence of important symptoms, except perhaps debility or indigestion, is scarcely suspected before the vital forces are well nigh exhausted, and the patient ready to sink

* Prof. Jones regards the affection as common to both sexes, but I can not recognize any condition to which the male sex is liable, as identical with this affection, so inseparably connected with menstrual disorder, either as a cause or consequence.

into the grave. But in some cases you will be called early in the progress, upon the occurrence, perhaps, of an attack of palpitation of the heart, or the characteristic beating or throbbing in the head, or a peculiar gloominess of feeling or anxiety of mind. The countenance will first strike the observer as peculiar, often exhibiting the most perfect exsanguineous, bloated, and waxen aspect; the lips and tongue present a similar paleness, with perhaps here and there a small spot of the usual color, which is complained of as being sore and exquisitely painful, and the tongue when protruded is tremulous. The hands and feet if examined will be found equally pale and often bloated, though not always edematous. In short the entire appearance is one of ghastly paleness, and can not easily be mistaken.

While the skin exhibits this bleached and exsanguineous appearance, indicating great deficiency in the capillary circulation, it will also have a hot, pungent, dry and husky feeling; yet even the most brisk friction will induce little if any excitement, and in some cases the application of turpentine or mustard, though causing pain, will not produce the usual redness. The pulse is always excited, varying from 100 to 150 per minute, and generally quick and sharp, though easily compressed. The excitement of the heart is at all times intense and labored, exhibiting its action by a general throbbing, especially of the carotids, which the patient describes as a "hammering," while the sound produced is called a "rushing" sound, which is found on examination to be a distinct bellows murmur. Respiration is always increased in frequency, in some instances oppressed and sighing, with frequent attacks of dyspnoea, especially upon any exertion. An attempt to rise up frequently produces a temporary blindness and severe, shooting pains through the head.

The stomach is generally irritable, especially late in the progress of the disease, sometimes rejecting almost every thing put into it, and always tender upon pressure on the epigastrium. The bowels also are always irritable, and generally a thin, dirty-yellow and offensive diarrhea accompanies the case throughout; sometimes the bowels are costive, but always sensitive to medicine, continuing to operate upon the administration of the mildest aperient for a number of days. In some cases great complaint is made of soreness of the throat and also of the mouth, but upon examination little evidence of disease will be found, often not at all commensurate with the

complaints made. Bleeding at the nose is a frequent symptom, while the blood is often scarcely red enough to color white cloth. The secretion of milk is always greatly diminished, and often nearly wanting, while the lochial discharge is very little disturbed, though occasionally less than natural.

These then are the general and most prominent symptoms of puerperal anæmia, though without doubt others of a *common* character may be observed. It will be noticed, as I have before remarked, that the great, leading symptoms of puerperal anæmia are the same as those of chlorosis, but you will not fail to discover a difference, in some respects, of an important character. Yet, in a mere symptomalogical point of view, it might be questioned whether any more marked difference is presented between these modifications, than might be fairly referable to the peculiar conditions of the systems in the two cases; in other words, whether the puerperal state does not present inherent peculiarities adequate to account for the symptoms associated with it which differ from those unconnected with that state, without reference to any pathological difference in the nature of the two affections. Furthermore, while puerperal anæmia is most clearly connected, in some way, with the procreative functions, I have never yet met with a case of chlorosis, in which I was not able to trace the symptoms to some abnormal action in the sexual functions, growing out of accidental disturbance or venereal abuses.

But, while we might be able to reconcile an apparent distinction in an abstract point of view, the results of experience in the treatment of numerous cases of both modifications of these affections fully confirm the difference which the symptoms suggest. I am therefore impressed with the conviction that, what observation and experience fairly imply, future investigation will amply corroborate.

Causes.—In leaving out of view all those cases of anæmia connected with or produced by other diseases, and considering those cases only that might with some propriety be termed idiopathic, I have clearly brought the subject within very narrow limits so far as regards the *causes* of the disease. I have felt justified in pursuing this course, since all those cases presenting the general evidences of anæmia produced by other diseases, such as hemorrhages, frequent bleedings, excessive and protracted discharges in chronic and debilitating affections,—in short all those cases con-

nected with other distinct and special diseases, are appropriately treated of in their proper places, and any further reference to them at this time would be out of place and unnecessary.

In discussing the causes of that form of anæmia called chlorosis or green-sickness, I may be allowed to remark that I consider the affection common to both males and females, though perhaps occurring more frequently in the latter than the former, owing in part no doubt to the more extended sympathies of the female system. This disease occurs most commonly at or after the age of puberty, rarely in advanced life, and as I have before remarked, I have never yet met with a case where I did not become satisfied that the symptoms were most clearly referable to abuses of the sexual organs. [I have seen cases in which I was fully satisfied no such abuse existed. Hereditary predisposition; a feeble constitution; the lymphatic and nervous temperament combined; deprivation of the comforts and necessities of life; loss of friends and depressing mental condition from various causes; confinement to sedentary habits, bad air, low damp and cold apartments, deficient clothing, etc., are among the circumstances which I have recognized as sufficient to account for chlorosis in persons who satisfied me that they were entirely guiltless of onanism or any other sexual abuse. S.] And perhaps I shall find no better opportunity to call your attention to the manifold evils growing out of these abuses. The importance of this subject has not been properly appreciated by systematic medical writers, or else feelings of delicacy have deterred them from discussing the subject as its importance demands. But in my opinion true science is not squeamish, nor will it sacrifice the highest interests of humanity to a false modesty. I therefore deem no apology necessary for introducing the following remarks:

“How limited,” says a medical writer, “is our knowledge of the pathological character of these troubles? How little we know of their existence, and how frequently they elude our research? The veil of secrecy and shamefaced denial hides them from our view. They are produced by personal gratification and perverted action of the strongest passions of the animal system; a passion that overrides all other physical powers, and is the basis of all earthly affections and sympathies of the heart. It partakes of all the characteristics of forbidden fruit, and is heightened by the imaginings of a perverted imagination. It is the seat of the ‘one idea’ that dethrones reason, and fills our lunatic asylums with their

inmates. It is also the source from 'whence the darker passions' flow, as the prisons and gallows can assert. The grave of the suicide can bear witness to the same truth. The poet and the novelist have made this giant their theme, and portrayed his power for the weal or woe of mankind; but the medical philosopher has neglected to cultivate his acquaintance. He has been suffered to secrete himself among the moral affections, and has seldom been dragged forth to answer for the deeds done in the body! It is time these organs, so far as reproduction is concerned, should be thoroughly studied, and their pathological influences clearly developed. But the passions and appetites which lie behind them are almost entirely hidden from our view. Their use or abuse has seldom been referred to as the origin of this diseased action. The world sneers at and ridicules the suspicion that health is affected by their indulgence, and the physician is apt to join in the cry and refuse to give the matter serious consideration. We hardly know

——— 'that love's hectic flush
Will sap, at length, the very springs of life,'

and we have been slow to believe that disease of these organs may produce every variety of chronic disease, ultimately be transferred to the brain, and cause mania or death."

It may be difficult to explain the precise mode in which the influences referred to produce the train of symptoms connected with such cases, or to tell why these indulgences operate injuriously upon the assimilative functions and deteriorate the blood. Yet it is none the less true that these and other equally serious disorders grow out of these abuses, that seminal weaknesses, leucorrhœal discharges, uterine affections, dyspeptic symptoms, bowel disorders, marasmus, and death, are among the admitted results of the same cause. And the marvel with me is that anæmia is not far more common. That it is often produced by sexual abuses is clear from the fact that, like many other disorders having the same origin, it never occurs before puberty, and seldom in advanced life, but exists only when the sexual passion is in full vigor, and when indulgences are most likely to be frequent and excessive.

In relation to the cause of puerperal anæmia but little of a satisfactory character can be said. In the present state of our knowledge on this subject, we are compelled to confess our ignorance, and resort to vague and unsatisfactory conjectures to account for its origin. It can not properly be said to result from the shock given to the system in parturition, as its characteristic symptoms

often appear previous to that period and it is only more perfectly developed, and its termination more rapidly hastened by that change. It can not be produced by the drain upon the blood consequent upon the demands of fetal and uterine developments, as in that case it would imply a universal connection with gestation; whereas it often shows itself some weeks after confinement. The waste of the system in supplying materials for the growth of the child *in utero* or afterward at the breast, is not equal to the manifest decline of flesh, blood and strength in cases of this disease, and therefore is not adequate to account for it. If it should be supposed to have its remote origin from an imperfect action in the chyloferous absorbents, by which the blood is prevented from being replenished, and consequently very soon presents the deteriorated and impoverished condition universally found in this affection, we are still left to conjecture what relation that deficient action in the chyle vessels bears to the puerperal state, or in what way this morbid action is connected with gestation or lactation. Nor do the morbid phenomena growing out of the affection throw any light on its connection with the puerperal state. Yet it has been too often observed in connection with that condition—rarely if ever with any other state of the system—to render the relation a doubtful one.

What relation, then, do they bear to each other? I have but a single suggestion to make in answer to this question. There can be no doubt that the two functions of gestation and lactation have an important sympathetic connection with the chyloferous absorbents, and perhaps with nutrition. Hence during pregnancy, and especially in its early stages, before the demand is great for the fetal growth, the appetite is increased, and an inordinate action in the absorption of nutriment is palpable, as shown by the accumulation of blood and flesh. This goes on increasing, though not quite so rapidly, perhaps, in the latter stages when the supply is more largely appropriated for the increasing growth of the uterine contents. Nor does this extraordinary action always stop upon parturition, as many females continue to increase in size, notwithstanding the increased demand upon the system for the lactiferous supply; thus showing that there is an unusual action in the chyloferous absorbents. This, I think, can not be questioned. And upon the well-known principle that excess of action is followed by loss of action, the absorbents become sluggish, the usual supplies are cut off, and all the train of symptoms ensue. In this way long-

continued overaction of the liver in the secretion of bile is liable to be followed by a corresponding inactivity; and so of every other animal function.

I conclude, therefore, that every symptom of the disease shows beyond a doubt that it consists essentially in an impoverished condition of the blood, and that this can not be produced by the deteriorating or exhausting influence of gestation or lactation; but that it has its origin in the loss of action in the absorbents, which indirectly follows upon the excessive action required to supply the demands of the system during the periods of pregnancy and lactation. This view of the case is not only rendered probable by the facts already stated, but also receives some support from the morbid developments which have been observed in fatal cases of the disease; though it must be acknowledged the evidences thus afforded are more of a negative than of a decidedly positive character. The three or four cases of post-mortem examinations which I have made did not exhibit lesions in any of the organs sufficiently extensive to account for the results, apart from the condition of the blood. In every case the blood was found greatly diminished in amount—in fact the blood-vessels were nearly empty—and possessed only a small proportion of fibrin and coloring matter. There were no leading evidences of disease, though slight traces of morbid action were detected in connection with most of the important organs. Slight effusions in the peritoneal and pleural cavities were found in most of the cases, and in one of them the same result was observed in the pericardium and ventricles of the brain, while the gastro-intestinal mucous membrane exhibited an appearance not very unlike that of the mouth and tongue already described among the symptoms during the progress of the disease. The uterus and its appendages were rather paler than natural, but in other respects showed no traces of diseased action.

Prognosis.—The results of the case depend very much upon the time the disease has continued, the progress it has made, and the course pursued in its treatment. If the case is considered as one of gastro-enteric irritation and is treated with mucilages, etc., the result will soon be known by its fatality. But in a large majority of cases, favorable results may be reasonably anticipated from an appropriate course of restorative medication.

Treatment.—From what has been said of the two forms of the disease, it would naturally be inferred that a different course of treatment would be required for each. Such are the results of my

experience. In the chlorotic form of anæmia, the first and most important point is to put a stop to those secret habits which have largely contributed to its production. It will often require no little adroitness and skill, on the part of the practitioner, to approach the subject without repulsing the patient, and thus losing the opportunity of enforcing the indispensable necessity of reform. Even in the cases of males I have frequently been met, in the beginning, with the most positive denials; but after acquiring their confidence have finally drawn forth admission to the fullest extent. And here let me remark that patients in such cases are apt to be extremely shy and suspicious, morbidly sensitive, and fearful of ridicule or contempt—feelings which are naturally intensified by a painful sense of self-abasement. It is therefore exceedingly difficult to approach them, while, at the same time, they will perhaps have an intense longing for the profound confidence of a good friend who could aid them to escape from their debasing thralldom, and would be glad to receive advances made in the spirit of true kindness and sympathy, especially if accompanied with positive or implied assurances of entire secrecy.

After giving this matter your first attention, appropriate measures should be instituted to remove any other apparent or real aberrations. Thus if the menstrual secretion is irregular, or entirely suppressed, or has improperly never taken place, in either case the remedies best calculated to increase or restore the secretion to a healthy condition will be necessary. To fulfill these indications—all being essentially the same—a pill composed as follows may be given night and morning, or often enough to secure a free action of the bowels once or twice in the twenty-four hours, to wit:

- ℞. Aloes, guaiac. myrrh,
Sulphate of iron, in powder, āā. ʒj.
Alcoholic ext. macrotys rac., q. s.
Mix and form forty pills.

These pills should be persevered with for a long time, and will rarely fail to answer the desired end. As much exercise in the open air as possible should be taken, and a substantial and digestible diet, embracing eggs, rare beef, roast potatoes, and the like, should be allowed, carefully avoiding, however, late and irregular meals, every approach to gluttony, and all kinds of confectioneries and condiments. It is equally important, in cases of secret abuses, that the

minds of patients should be usefully and constantly occupied, and the attention studiously diverted from every thing having a tendency to excite impure thoughts and inflame the passions, either by conversation, or through the medium of any of the senses. Cold bathing is peculiarly beneficial in these cases, in purifying the skin, equalizing the circulation, calming the passions, and allaying the unnatural excitement of the system. The whole surface should be bathed at least once a day, and a prompt resort to local bathings will be very efficient in aiding the patient to control the rising passions. It is worthy of remark that during the baths, as well as at all other times, the company of a staid and judicious friend will be highly prudent and advantageous.

But if the menstrual evacuation is not disturbed, or if the case be that of a male with torpid liver and symptoms of indigestion, the taraxacum and podophyllin pill, heretofore prescribed for hepatic inactivity, may be given, and if there is too much irritation of the gastric mucous surface to tolerate the gin bitters, the wild-cherry bark and ptelea in decoction may be taken in suitable doses as a tonic, while the other measures first directed should be prescribed as general restoratives. But when there is mere torpor of the bowels, without irritation and debility, the gin bitters (compound tincture of tamarac), given in sufficient doses for their aperient action on the bowels, will fulfill all the main indications better than any other remedy.

But for that form of anæmia connected with the puerperal condition a considerably modified course will be necessary. Cases of this form are attended with symptoms of more severity, and will require far greater care and attention than the other form. The excessive arterial excitement and severe throbbing in the head are well calculated to deceive the inexperienced practitioner, and lead him to institute a course of treatment for excessive action and repletion, rather than for extreme debility and its frequent attendant irritation. The appearance of the tongue, and the attenuated and pale condition of the blood, immediately suggest the administration of chalybeates and mild farinaceous food as the appropriate measures; and I confess that my early practice began with high hopes of satisfactory results from this course. But the rapid decline and fatal termination of most of the cases thus medicated soon convinced me of the deceptive character of the symptoms, and the unfitness of the treatment. Afterward, adopting the view that exhaustion and debility were the essential characters of the

case, I pursued a general restorative and more stimulant course with far greater success, and with few fatal terminations.

It is true the diet at first must be restricted to very simple articles, but they must be stimulating and highly nutritious. Small pieces of tender steak, put in an empty bottle, which must be corked and boiled in a kettle of water, will yield a highly concentrated and nutritious extract, which, taken in small quantities, will be easily digested and very nourishing. This may be given in dessertspoonful doses every hour, and gradually increased until other and more gross food can be safely substituted. I have witnessed good effects from the use of egg-nog, prepared from eggs, rich milk, a little pale brandy and sufficient sugar, and given in quantities suited to the case, say a tablespoonful at a time every few hours. Its stimulant and nutritious qualities may at first produce slightly increased action, but this will soon subside, and the system be strengthened and refreshed. Rare done beef chewed, without swallowing the substance, will be a very good article of diet, and as the strength improves, and the stomach becomes able to tolerate more and a greater variety of food, roasted potatoes, venison steak, rice puddings, and such other articles as experience and the habits of the patient will suggest, may be allowed. In connection with these articles, I have generally found the use of small quantities of some stimulating drinks, such as *good* ale or brown stout, or, for some constitutions, wine either pure or in the form of wine whey, or *pure* brandy, if such an article can be found, to have the very best effect, while mild but unirritating tonics should be given two or three times a day. I know of no article of this class which answers so good a purpose as the infusion of ptelea given in tablespoonful doses. For the purpose of correcting the neuralgic symptoms—generally more or less attendant upon these cases—as well as for the supposed influence upon the blood, I have been much in the habit of administering quinia and prussiate of iron in one or two grain doses each, once in four hours, for a few days, and then suspending, to be again repeated if thought desirable.

In all these cases, at whatsoever stage you may be called, a measure full of comfort to the patient, and not much less important in a curative point of view, is frequent bathing of the whole surface with warm whisky and weak lye. When the skin is hot it may be done every hour or two, but at any rate once or twice a

day. In regard to opiates, although I have generally felt reluctant to administer them in most cases of debility, yet I have found great advantage in many instances of this affection, from the use of small quantities of morphine, say from one-sixteenth to one-eighth of a grain once or twice in the twenty-four hours. It will allay that excessive sensitiveness which exists in the throat, and which no doubt extends into the stomach and bowels, and it will also assist in restraining the too frequent discharges which are generally attendant symptoms. But for this purpose, few articles will be more clearly beneficial in any disease, than a strong decoction of the blackberry-root, moderately sweetened, and given in ounce doses three or four times a day, according to the urgency, or rather frequency of the evacuations.

If chalybeates are at all beneficial—of which I have some doubts, especially until after other measures have been used for a time, and the patient is considerably improved—the tincture of muriate of iron, in a solution of soda, is without doubt, the best of the kind. After the absorbents have been roused to increased action, and the blood somewhat replenished, this preparation will most unquestionably impart a more healthy quality to the circulating fluid, and thereby increase its action in the capillary vessels. But until the intestinal absorbents shall have been stimulated to an increased and more healthy action, it will be vain to hope for good results from a remedy only beneficial by the change it may work upon the constituency of the blood after it is absorbed.

[The successful treatment of chlorosis demands pure dry air, a wholesome mixed diet adapted to the digestive powers, daily, moderate, cheering exercise, a daily cleansing and stimulating bath, flannel next the skin and frequently changed, and the employment of such medicines as strengthen the digestive organs and improve the quality of the blood.

I have used the following pill with advantage :

R. Caulophyllin,
Ptelein, āā, ʒij.
Strychnia, grj.
Ext. juglans or taraxacum, ʒij.
Mix and form forty pills.

S. One three times a day an hour before eating.
In connection with the above :

R. Ammonio-citrate of iron, ʒss.

Dissolve in water, f ʒij.

Add lemon sirup, f ʒij.

S. Take a teaspoonful half an hour after each meal.

The above treatment has speedily and effectually cured several severe cases of chlorosis. It should be persevered in, especially the iron, for some time after all anæmic symptoms have disappeared.

The following pills, a modification of the boluses of Dr. Blaud, of Beaucaire, I have used in some cases with very good effect:

R. Sulphate of iron,

Carbonate of potash, āā, ʒss.

Reduce separately to fine powder and mix thoroughly, little by little. Then add mucilage of opium tragacanth a sufficient quantity, and beat in a mortar to form a pill mass. Divide into one hundred and forty-four pills. Give two pills three times a day, at first. After three or four days, give two twice a day; and so on, gradually increasing the daily administration until at length the dose may be four or even six pills three times a day.

These pills when prepared as above directed are composed chiefly of subcarbonate of iron and sulphate of soda resulting from mutual decomposition of the sulphate of iron and carbonate of soda. They are therefore chalybeate and aperient. S.]

LECTURE LXVII.

LOCAL DISEASES—CONTINUED.

Scurvy: Reference to History; Various theories; Nature; Symptoms; Anatomical characters; Causes; Diagnosis; Treatment. Purpura; Symptoms; Duration; Causes; Diagnosis; Treatment.

SCURVY OR SCORBUTUS.

I do not intend to occupy your time by reciting the history of *Scurvy*, though many important facts illustrating the pathology of the disease might thus be learned. It will suffice to refer those who desire to investigate the subject more in detail to the elaborate discussions in Good's Study of Medicine and in Tweedie's Library of Practical Medicine. I will remark, however, that for antiquity, few diseases compare with it, and that the "king of terrors" owes as much to scurvy, in proportion to the number of cases of the disease, as to any other known to history. Towns and cities were formerly depopulated, and armies and ships' crews were cut off in very short periods. Its prevalence in fleets both at sea and in harbors, in certain armies and in particular localities, was attended with such circumstances as to give it the leading characteristics of an endemic. But modern science has determined its true character, at least in general terms; has stayed its prevalence; and shorn it of its fatality. So that at the present time scurvy may be considered a rare disease, and scarcely ever fatal when it does occur.

Nature and causes.—It may now be considered without any doubt to consist in a *vitiated or altered condition of the blood*, especially in some of its constituent elements, thus inducing debility, local congestion, petechial spots and hemorrhages, especially from the gums and bowels. This condition is brought on by continued abstinence from the use of fresh vegetables, which abound in certain proximate principles or elementary substances necessary to the health of the system. It therefore becomes highly important that a knowledge of the circumstances favorable to its production, and of the measures best calculated to remove it, should be as general and widespread as the human family.

Until within a short period the medical authorities taught the doctrine that scurvy was somewhat peculiar to cold climates, and was mainly produced by the use of salted and putrescent meat. Even Dr. Eberle says, "The exciting causes are the habitual use of innutritious, unwholesome, or an exclusive *salt animal* or *vegetable* diet," clearly intimating that the excessive use of salt was the main, if not the exclusive, exciting cause. This view of the subject seemed to be sustained by the most prominent facts observed in connection with the disease. It had been observed to prevail most among armies, and at sea among sailors, confined for a long period to an exclusively salt animal diet and hard biscuit,—and hence the above conclusion in regard to its cause, overlooking other facts which point as strongly in another direction. It has been shown that it may occur among those whose exclusive food is fresh meat, and that patients affected with the disease will recover by the liberal use of salt meat, if supplied with a proper proportion of fresh vegetable food. "The soldiers in the Russian armies, who in the early part of the last century suffered greatly from scurvy, had no salt provisions." "In the middle of last century, when Sisinghurst castle in Kent was filled with French prisoners, scurvy broke out among them, although from the time of their arrival in England they had eaten no salt provisions, but had been served daily with fresh meat and bread, but without greens or other vegetables." "The preceding instances are sufficient to show that scurvy may arise independently of the use of salt provisions; there are other facts which lead to the conviction that salt has no influence whatever in producing it." (*Tweedie*.) Workmen engaged in the manufacture of salt, and who labor night and day, and even live in salt mines in which the atmosphere must be highly charged with salt vapor, are remarkably healthy, and never subject to this disease. Salt water may be used freely and for a long time without producing the disease, and, for the purpose of testing the matter, patients laboring under the disease have been given salt liberally without in the least aggravating the symptoms. These facts, and also the facility with which scurvy is cured by the free use of lemon juice, while the scorbutic subject is at the same time allowed the use of salt animal food, abundantly prove that the cause heretofore assigned is not the true one. "The circumstances we have adduced," says Tweedie, "showing that scurvy may prevail to a frightful extent among persons living solely on fresh meat; that persons who, from the nature of their

occupations, are continually absorbing saline particles, are exempt from scurvy; that scurvy is not brought on by the use of sea water, which may be drank with impunity even by scorbutic people; and that the disease may be prevented for any length of time in persons who subsist on salt provisions, and can be readily cured even in those who continue the use of them, are sufficient to justify the conclusion that salt has no share whatever in producing it."

The long-continued inhalation of salt-water vapor, and confinement for a long time in situations where the atmosphere was liable to become contaminated, as in garrisons and on board ships, were no doubt the circumstances that led medical men and other observers to the conclusion that impure air and saline elements entering the circulation, both contributed to the production, if indeed they were not the only cause of scurvy. But when all the facts connected with the occurrence of the disease came to be observed and properly weighed and tested, it was conclusively settled, if observations can be relied on, that its true cause was rather the absence than the positive use of substances ordinarily composing our sustenance.

There can be no doubt that the atmosphere of crowded and ill-ventilated apartments, such as the holds of ships, densely populated and filthy parts of large cities, garrisons, and prisons, may indirectly contribute, if not alone sufficient, to produce the disease. Individuals thus situated, deprived of articles necessary to health, and confined to those which are fully shown to produce scurvy, would, no doubt, have the disease sooner developed, and it would be more obstinate and fatal in such cases, than if differently situated. Any circumstances which have a debilitating and enervating effect may contribute to the development of any disease, however variant the exciting or main producing cause may be from those circumstances. Tweedie says, "when a number of persons are placed in circumstances conducive to scurvy, the first to exhibit its symptoms are those who, from sickness or other causes, are in a state of debility."

The theories in regard to scurvy are various and conflicting. Other circumstances or influences than those already mentioned, closely connected with the first appearance of the disease, have been assigned as causes. Thus cold and moisture have both been supposed to favor its production, an inference which at one time was supposed to be justified by the apparently more common pre-

valence of scurvy in Northern latitudes, and at seasons of the year when moisture abounded in the atmosphere. Dr. Lind says, "that channel cruisers were often quickly overrun with scurvy, while their consorts, fitted out at the same ports, and consequently with provisions and water of like quality, who soon after left them for a much longer cruise off the Canaries or Cadiz, or a voyage to the Indies, kept pretty free from it, and that it always appeared in much shorter time, and raged with greater violence, in a squadron cruising in the narrow seas of the Baltic and Channel, or upon the coast of Norway or Hudson's Bay, than in another continuing the same length of time in the middle of the Atlantic Ocean."

"Sir G. Blane expresses the same opinion, which seems, however, to have been refuted by his own experience while physician to the fleet in the West Indies." Dr. Tweedie says, "An attentive consideration of the history of scurvy has convinced us that the influence of these causes has been much overrated, and that the comparative immunity from this disease formerly enjoyed by fleets in warm latitudes was mainly owing to supplies of oranges and other fruits with which Cadiz, Madeira, or the islands of the West Indies furnished them. We have already given instances of the occurrence of scurvy in the highest degree during the months of summer, and in tropical climates; so that no temperature is a preservative to this malady; nor does change from a cold to a warm climate, when scurvy exists, seem in any degree to lessen its severity. The writer of Lord Anson's voyage says, 'Some of us were willing to believe that in this warm climate the violence of the disease and its fatality might be in some degree mitigated; but the havoc of the distemper in our present circumstances soon convinced us of the falsity of this speculation.'

"In confirmation of this testimony we may again mention that, at present, the merchant seaman who enter the port of London affected with scurvy, come almost exclusively from the Mauritius, India, Ceylon or China, and have consequently been in no higher latitude than that of the Cape."

It is also mentioned that the disease is readily cured and always prevented, even in the most Northern latitudes, by the use of certain kinds of vegetables, such as sorrel, scurvy grass, potatoes and lemons.

The frequent prevalence of scurvy, in so general a manner as to give it the character of an epidemic, has led indiscriminating minds to class this affection among the contagions. But a doctrine

so inconsistent with the history of the disease, and so completely at variance with any known principle peculiar to contagion, could not receive the sanction of any thinking mind, and has not been approved by any respectable portion of the profession. This disorder, like all others when prevailing epidemically, occurs under such circumstances as readily to be mistaken for contagion, especially when the essential character of contagious affections is not fully understood.

“We have thus seen that scurvy may occur in all climates, either on land or at sea; in persons who subsist on salt meat or on fresh, and in situations where the utmost attention is paid to cleanliness and ventilation. There is one condition however which is necessary to the production of scurvy, namely: prolonged abstinence from succulent vegetables, or fruit, or their preserved juices, as an article of food. Where this condition is fulfilled, we find scurvy arising in persons whose situations are the most various in every respect in which we can compare them, while not a single instance can be cited of its occurring in a person well-supplied with these vegetables or fruits. This circumstance, together with the fact that scurvy is in all cases rapidly cured when a supply of these vegetables or fruits is furnished, leads us to consider the abstinence in question as its essential and sole cause.”—*Tweedie*.

Nature.—The history of the disease, the symptoms it presents, its well-determined cause, and all the phenomena connected with it, concur to show that the essential nature of scurvy is a vitiated condition of the blood. But in what this deterioration specially consists, whether in the loss of some of its plastic elements—thus rendering it less coagulable and affecting its circulation in the capillary vessels; or whether in an increase of the saline ingredients—thereby diminishing its vital properties, and favoring local engorgement and effusion; or whether it consists in a change, not readily recognized nor easily appreciated, either in the due proportion of the red corpuscles, or in their molecular formation, are questions that future research alone can answer. It is not easy to say, from what authors have written on the subject, whether any of the changes referred to are determined to take place in scurvy, since scarcely any two observers have recorded the same facts in the cases occurring in their experience. The most modern scientific statements, however, seem to have determined that neither the amount of fibrin nor albumen are essentially altered from their normal proportions, though the fibrin shows a slight increase, while

the red corpuseles are generally diminished, and the saline ingredients are essentially the same in their proportions as in health. [The fibrin is often greatly diminished, and when otherwise is probably imperfect in quality. Where there is an excess of fibrin there is often, probably always, evidence of present or recent inflammation.—S.] Thus while chemistry seems to have given us all the light which that department could be expected to afford, it has failed to develop those suggestive practical truths so desirable in the case. And though the microscope has not been neglected in this interesting and somewhat important topic, yet the facts which it belongs to this department of science to develop are equivocal in their illustration, and but little practical light is thereby gained. It is true we are told that the albumen of the blood does not coagulate at the ordinary temperature required to effect that change, and that the fibrin has lost to some extent its cohesive and plastic properties.

Amid this uncertainty, and as if to still further unsettle the doctrine of the blood in its relation to scurvy, another author of some standing announces a solution of the difficulty by asserting that the deficiency in the blood consists in a want of a proper amount of potassa, and attempts to sustain this doctrine by saying "that the use of food known to produce scurvy contained less of the salts of potassa than those which are capable of supporting the system in a healthy state; that those substances which act as antiscorbutics, such as fresh fruits and vegetables and especially potatoes, contain a large proportion of these salts; that the blood of a scorbutic patient examined by himself contained a much smaller proportion of potassa than healthy blood, and that less was excreted in the urine; that the disease may be cured by the use of potassa, or adding it in small quantities to the food." Without any attempt to disprove the statement of facts here set forth in relation to the chemistry of the subject, it has been shown that potassa fails to cure the disease. But a more conclusive answer is found in the experience of those who have had the most extensive opportunities of practically testing the curative properties of citric-acid. Here is a remedy almost amounting to a specific, which yet contains no element of potassa, nor is capable, by any possible epigenesis, of forming any preparation of that chemical substance. That announcement, therefore, can hardly be regarded as a correct solution of the proposition. Thus it will be seen that no investigations hitherto made have thrown any very satisfactory light on the intimate nature of the changes worked in the blood by the causes

which are clearly determined to produce those changes. To future investigations, therefore, we have to look for further developments in the chemico-vital properties of the blood in this as in many other diseases, before our prescriptions can be truly said to bear that relation to the disordered action which will entitle them to rank in the list of scientific truths.

Symptoms.—A disease which, like this, depends entirely upon the changes produced in the blood by the slow process of waste of certain principles without the usual supply, must necessarily be very gradual in its approach, and the symptoms connected with it must follow in progressive groups until life is destroyed, or the remedy is furnished to stay its progress and counteract its effects. Among the earliest manifestations of the disease is a change in the complexion, from a healthy to a pale and sallow, or slightly dark and sickly hue. Accompanying this manifestation of deranged action of the system, is a feeling of debility and languor, with a tendency to lowness of spirits and extreme aversion to any kind of action, either physical or mental, upon the occurrence of either of which to any great extent the patient is very apt to complain of fatigue, thus showing that the great fountain of health, strength and life is impaired.

Soon after these general evidences of disease are manifest, symptoms more particularly diagnostic begin to appear; the gums become swollen and begin to exhibit a dark color, a sore and tender sensation is complained of, and they are apt to bleed on the least touch. Upon examination, they present a livid and spongy appearance, and are often loose or partly detached, while the lips, tongue and inside of the cheeks present a more pale and bloodless aspect than in health.

As the derangement of the blood increases, all the symptoms show a corresponding aggravation; the complexion exhibits a more dusky hue, and a general debility rapidly increases so that the slightest exertion produces a breathless exhaustion, often followed by palpitation of the heart; and if an over effort has been made, a state of syncope may follow of an alarming character. The local symptoms fully keep pace with the general; the gums appear more spongy, swell enormously, and become purple and almost black, entirely covering the teeth or showing merely the ends; the teeth become loose, and not unfrequently drop out, or are picked out with the fingers as a nuisance; the breath becomes offensive, and altogether the patient becomes a pitiable and disgusting object.

Hemorrhages often occur not only from the gums, but also from the nose and throat, and sometimes from the stomach and bowels, often exhibiting copious evacuations of blood in the stools. Not unfrequently blood is discharged in the urine, both mixed with the secretion as emanating from the kidneys, and in a more unmingled state as coming from the vessels of the bladder. At this stage, dark, livid or petechial spots appear upon various parts of the surface, being usually first seen on the extremities, and gradually extending successively upon the legs, arms, neck, back, and finally more or less over the whole body. They are clearly extravasated blood in the cellular structure of the cutaneous tissue, issuing from disorganized vessels upon the surface of the skin proper, or percolating the relaxed tissues of the circulating tubes. The spots are generally small and irregular, but in some instances the effused fluid extends and spreads over considerable surface, exhibiting the black or purple appearance of a bruise.

With these symptoms of local difficulty severe engorgements occur; hard and painful tumors appearing among the muscles of the legs, arms, jaws, and sometimes other parts of the system, associated with stiffness of the joints and occasional contraction of the limbs. Progressive debility adds to the suffering of the patient, which is often so extreme as to produce the most complete prostration, or if able to make an effort to rise up in bed he falls back, faint and exhausted. At this stage in its progress, the least scratch or bruise, and even an old scar will show a strong tendency to bleed; and it is no uncommon occurrence for wounds healed up to open afresh and bleed profusely, while the disintegrating influence extends to the more solid structures, and old fractures are broken up.

Thus the whole organism gradually feels the force of this all-pervading source of decay. Eruptions upon the skin become aggravated, often bleed and become scaly, or degenerate into fungus and bleeding masses of imperfectly organized and unhealthy structures, and finally, the whole system becoming a mass of stale and effete matter, the vital principle departs; or perhaps local engorgement of some important organ occurs and destroys life before a complete contamination takes place.

The tongue in most cases throughout the complaint is free from fur, and the appetite is good, the patient often taking food with as much relish as in perfect health, but owing to tenderness of the gums and teeth, patients are deprived of the pleasure of indulging in any thing more than some simple and farinaceous substances. The

demand, however, is none the less, and at times is even painful, especially for those articles required by the system to counteract the morbid action going on. But in some cases the stomach becomes involved, and nausea and vomiting produce severe and prostrating effects. The bowels are sometimes loose, often discharging dark, coagulated blood; but more commonly they are costive, and occasionally obstinate constipation, with difficulty in evacuating, attends the case. The pulse is generally feeble, rarely excited, but most frequently slower than in health; while the skin is cooler than natural, with cold extremities. But if local inflammatory action occurs, we should expect to find a hot skin and excited pulse. The urine is diminished in quantity, and generally red or high-colored, and occasionally mixed with blood. With all these symptoms of general disease it could scarcely be otherwise than that emaciation should rapidly take place.

Few diseases present a more variable character than scurvy. Sometimes it breaks out quite suddenly, runs its course with great malignancy, and terminates fatally in a short period. But most generally it approaches insidiously, and pursues its course with a gradual increase in the accumulating and progressive symptoms, until the circumstances of the case change or the system sinks under the weight of the morbid action. The difference in these respects is no doubt owing to natural vigor of constitution, or to the weak and exhausted powers of the system, or to the degree and extent of the cause that produces the disease. It no doubt is more violent and severe when epidemic influences co-operate in its production, and it is said also to have manifested a greater malignancy at sea than on land, owing most likely to the greater difficulty of procuring, and longer abstinence from, those articles of diet which experience has shown will prevent or counteract the disease. The difference thus observed gave rise in early time to the opinion, recognized by the earlier writers, that sea and land scurvy were distinct diseases, or at least essentially modified affections, a distinction, however, that modern authors have very justly discarded.

The disease is always more malignant when complicated with other affections. Thus, when the ordinary causes are sufficient to develop scurvy among a ship's crew, and in addition an animal malaria, competent alone to produce typhoid fever, is generated by carelessness and inattention to cleanliness and ventilation, both diseases will present a most unpromising aspect, and will be far more

likely to prove fatal. So also when it occurs simultaneously with epidemic dysentery—a complication not unfrequent in prisons and garrisons—the two affections become more malignant and intractable.

Common observation shows that scurvy prevails most frequently in the spring, and also in cold regions, which in both cases is accounted for no doubt by the difficulty of procuring those articles the want of which produces the disease.

Anatomical characters.—Few words are necessary on this subject, since the views I have already presented would naturally lead to the conclusion that the morbid appearances to be looked for must exist in the blood, and the condition of that fluid has been sufficiently discussed to present, by fair implication, all that might be expected. I will say, however, that extravasated blood is found more or less extensively in various parts of the system, and the purple spots upon the skin are merely extravasated or ecchymosed blood percolated through the coats of the blood-vessels. The same is frequently found in the pleural cavity, the peritoneal sac, and other serous cavities, and also coagula of blood are often found in the aorta and cavities of the heart, while blood in a thin and uncoagulated state fills the larger vessels, no alteration in the solid viscera being observed, other than what would naturally result from the derangement of the blood circulating through them. The spleen, as might be supposed, is found engorged with dark blood, and frequently softened. The mucous membranes present a blanched or pale appearance where they have not been percolated by the diffused blood, and the texture of the muscles in general and the heart in particular is soft and flabby; in short the whole system presents the relaxed and exhausted state which the symptoms during life would naturally suggest.

Causes.—I have already sufficiently considered the causes which it has been generally decided, from experience, are instrumental in producing the affection, and will only allude to them again in passing. They are not of a *positive* character operating directly upon the system. The cause of the disease is rather a negative influence, being the *want* of those articles of food which furnish the system, through the medium of the blood, with certain elements indispensable to life and health. I need not repeat that it is not at present known precisely what those elements are; but common observation has determined that they must exist in certain kinds of succulent fruits and vegetables ordinarily used, and

making up an indispensable part of our sustenance. And when from accident or otherwise we are deprived of them for any considerable length of time, whether the food actually used consists largely either of fresh or salt animal food and hard bread, scurvy will ensue.

Diagnosis.—An eruptive disease, characterized by peculiar purple spots called purpura, is the only disease with which scurvy is liable to be confounded, and then only by the similarity in the appearance of the petechial spots common to both. When the general symptoms peculiar to each of these affections are properly considered, little difficulty will be experienced. It will suffice to state that the leading symptoms of scurvy, not connected with purpura, are, the swollen and livid gums, the sallow and dusky skin, and frequent hemorrhages from the nose and other parts. These, with the history of the case, may be relied on to distinguish the disorders.

Treatment.—I suppose I might leave the treatment of scurvy to be inferred from what has already been said in relation to its cause and history. It will be proper, however, to explain more particularly what is meant by “succulent fruits and vegetables,” and state distinctly what course experience has proved to be successful in the cure of this disease.

Few if any *medicines*, having any specific effect in correcting the morbid condition of the system which is known to constitute the essential nature of scurvy, have ever been recommended. Yet there are some remedies which are calculated to correct or restrain, to some extent, the morbid influences growing out of the general derangement in this disease. The constipation often attendant upon it can be obviated, probably with as good effect as by any other means, by the gin bitters (compound tincture of tamarac), say half a wineglassful three times a day. This preparation operates mildly as an aperient, while at the same time it is an excellent tonic, which is needed in most cases of the kind, and is also a valuable diuretic, increasing in a sensible degree the urinary excretion. In fact it will be found to act upon all the secretions more or less, thus fulfilling the leading indications of the disease. If active hemorrhages should be exhausting the declining strength of the patient, they should be met with appropriate astringents and styptics; and when there is relaxation of the bowels and an exhausting diarrhea, the sirup of blackberry-root may be given in two tablespoonful doses three or four times day; or, as a more

prompt, but not as permanent a remedy, the tincture of catechu and paregoric may be given in drachm doses at every evacuation until their frequency is restrained. If there is an acid state of the stomach, the compound neutralizing physic may be given as in other cases.

But the important measure for the cure of the disease consists in the use of certain succulent fruits and vegetables. Among the most prominent of these, and possessing almost the character of a specific, may be mentioned lemons, oranges, and most other tropical fruits of this class, known in botany as the family of aurantiacæ. When they can be had, the juice from the fresh fruit, or, if convenient, the acid contained in them called citric acid, should be given plentifully. Says Tweedie, "Their salutary effect is extraordinary, and such as would scarcely be imagined by persons who have not witnessed it. In the course of a few days, the complexion loses its sallow and dusky hue; the gums become firm and florid; the petechiæ and bruise-marks on the skin disappear; the legs, if swollen and rigid, begin to regain their natural size and pliancy; despondency and muscular weakness are replaced by cheerfulness and a feeling of strength; in fact the aspect and condition of the patient soon betoken the return of health." In addition to or in absence of these, many acidulous fruits, such as apples, peaches, strawberries, and particularly unripe grapes, and the like, have been found from experience to possess excellent antiscorbutic properties, and may be used in almost any case with good effect.

Next to the orange class of remedies, fresh vegetables and especially the cruciferae, or some portion of that class of plants, are more particularly recommended and used in this disease. Among these may be mentioned cabbage, turnips, radishes, horseradish, watercress and the like as opportunities may be afforded to procure them. The cabbage in particular seems to have been found a valuable remedy, and may be used in a raw state, in the form of coldslaw with vinegar, or in the form of sourcroust. Potatoes, also, both cooked and raw, have been used, and have been particularly recommended in the raw state by being grated and used with vinegar. But in institutions where scurvy is liable to prevail, the boiled potato is most relied on as a prophylactic, being supposed, and no doubt with truth, to possess valuable preventive antiscorbutic properties. It is stated that, since the introduction of the potato as a regular article of diet in many institutions of the old

world, where scurvy was apt to prevail and occasionally to an alarming extent, the disease has become unknown, and it is also supposed that its decrease among the poor of those countries, where it often prevailed to a fatal degree, is referable to the same cause.

Besides the vegetables thus enumerated, other articles prepared from the farinaceous grains will be useful; such as the infusion of malts, or some of the fermented liquors, as ale, beer, and sour wines. Molasses, also, has been administered with such good effects as to recommend it to favorable consideration. Various other vegetables, such as wild sorrel, garden cresses, and pie-plant or rhubarb, have severally been used with beneficial effects. A number of the different species of pines and firs have been tried with satisfactory results, particularly the *pinus sylvestris* and the *abies rubra*, in the form of infusion. These might take the place of more common, and probably more reliable articles, when it is inconvenient to procure the latter. In northern regions where the evergreen trees are very common, the women frequently prepare a beer from the boughs of the spruce, in part, which is highly recommended as a remedy for scurvy.

I have thus mentioned most of the articles which are considered prophylactic and curative remedies in the treatment of scurvy, and will only add that good, wholesome and nutritious food should be allowed in reasonable quantities, while proper regard should be paid to exercise in the open air, and special attention be given to ventilation and cleanliness, so as to secure the most rapid elimination of the stale and effete materials of the body which every symptom of the disease clearly shows to exist in great excess. Care should be taken to obtain a reasonable amount of sleep, as indispensably necessary to reparation, in every condition of the system. If necessary, opiates should be given, but are generally to be avoided if possible. The common diaphoretic powder, (compound powder of ipecac. and opium), may be mentioned as the most eligible preparation. But it would be best to first try Hoffman's anodyne, or some preparation of valerian, such as the valerianate of quinia, or hop tea, or, what is perhaps a better preparation, portions of lupulin, taken at night.

We may sum up in few words the course and measures most eligible and proper in the treatment of scurvy; first, a generous and nutritious diet, as the condition of the patient will allow; cleanliness, and fresh air with a moderate amount of exercise, without fatigue; the use of gentle tonics combining stimulant and

alterative properties; frequent bathing of the whole surface followed by brisk friction; the free use of lemonade or oranges, or both, and such other fresh vegetables as convenience and circumstances will permit, such as potatoes, cabbage, turnips, etc.; and if the system is greatly debilitated and exhausted, the moderate use of beer, ale, cider, and such other direct stimulants as may best suit the character of the case, and may be found most congenial to the taste and habits of the individual.

PURPURA, OR HEMORRÆA PETECHIALIS.

Symptoms.—This is a disease of the skin and is characterized by irregular patches of different sizes, varying from a mere point to the bigness of a half-dollar and sometimes even larger, of a dark or purple color, and permanent though disappearing for the moment under pressure. These spots not only appear on the skin, but are sometimes seen on mucous surfaces, especially the nose and inner parts of the cheeks, and no doubt also exist in the bowels and lungs. They are often attendant symptoms of other affections, especially congestive and malignant fevers and dysenteries, in which a decomposed or greatly altered state of the blood exists. But the affection I am now considering occurs independently of other *particular* disorders, though I entertain little doubt that a somewhat similar condition of the blood and blood-vessels exists in both cases. Most authors have generally considered purpura in the class of eruptive diseases; but it has so little of the character of those diseases, and in fact so little of an independent character at all, that I see no sufficient reasons for placing it in any distinct class, and scarcely for elevating it to a separate consideration. As however I have been called to prescribe for it in a number of instances, I will notice it briefly.

It seems to be in some way *connected with the condition of the blood*, as all the cases that have come under my notice have presented unmistakable evidences of previous derangement of the system and apparent disorders of the blood. Accompanying such cases will be found a languid and debilitated state of the system, an inability or disinclination to exercise, a dusky paleness, and a feeble pulse, somewhat increased in frequency. The tongue is usually coated, the appetite small, and the bowels confined. Not unfrequently the appearance of the spots is preceded or accompanied by slight chilly sensations, pain in the back, head, and limbs, and is often followed by some heat of the skin upon the body, though

the extremities are cold, and by other symptoms similar to ordinary attacks of fever. But other cases occur without these general evidences of acute disease, and only present the symptoms of general debility and derangement, occurring in a very gradual and almost imperceptible manner.

The spots appear first upon the lower extremities about the ankles and feet, and afterward extend to the body and upper extremities. When they appear gradually and without much general disturbance, the petechiæ are confined to the feet and legs. According to tradition they usually occur at night, and are first seen in the morning, and Professor Wood thinks this "statement is undoubtedly correct; as it is in the morning generally the legs are seen bare," which naturally suggests the reflection, that if they are bare in the morning they were probably made so in the evening! As already remarked the size and appearance of the eruptions vary in different cases, in some being quite small and in others again much larger; they are sometimes nearly circular, but more generally oblong, notched, and irregular. The color also varies, in many cases being of a dark-purple hue, in others at first of a bright red, but gradually assuming a dark-purple or brown color, and fading into a yellowish green, as in the disappearance of a bruise. These spots rarely occur all at once, but as some are subsiding others are beginning to be seen, and thus they continue, gradually lessening in the successive crops until at length they disappear entirely. They are generally without pain or sensibility, and without any increase in the temperature of the parts; being on the contrary even colder than natural. Sometimes, however, they are hot and painful, and exceedingly tender, producing lameness or inability to walk, and present the appearance of bulla without the bleb and with little or no tendency to the formation of matter. They sometimes present a distinct hemorrhagic tendency, with perceptible accumulations of blood-blisters, and I have seen a number of instances in which the eyes were affected. The cases presenting the hemorrhagic character are liable to be accompanied with bloody discharges from the bowels, especially if drastic medicine be administered, and it is said that hemorrhage occasionally takes place from serous surfaces, as in the pericardium and pleural cavity.

The *duration* of the disorder depends much upon the extent of derangement connected with it. In main it may be said to be somewhat slow and tedious, though attended with but little if any

danger. Females are more subject to the complaint than males, and most cases that have occurred in my practice have been those of young ladies just emerging into womanhood, but subject either to irregularity in the menstrual discharge, or in whom it never appeared. But these petechial spots sometimes appear upon persons greatly advanced in life, especially females who take but little exercise, and in whom a vitiated condition of the blood takes place from accumulation of carbonaceous elements, and stale and effete materials, but who present in other respects no evidences of derangement, and from whom they often disappear without any assignable cause, unless perhaps from taking more exercise than usual in the open air.

The character of this eruption, if it may be so called, is an extravasation of blood immediately under the cuticle, which can be washed off after death without leaving any marks of disorganization or inflammatory action so far as ordinary observation can discover. The same appearances are also observed upon portions of the mucous membrane; extravasated blood is found immediately under the epithelial membrane, but not diffused into the cellular structure or the mucous tissues. The blood is often found in a thinner or more fluid state than natural, but in other cases presenting a dark grumous character.

Causes.—In reflecting upon the cases which have come under my own observation, but a single suggestion has appeared to me to account for them in any satisfactory way. In all those cases inactive secretions attendant upon sedentary habits, and a very sensible derangement of the blood, had been produced by a want of the necessary amount of exercise to eliminate the effete matter resulting from the changes of growth and repair. The same causes might and often do produce irregularity in the menstrual evacuation and thus contribute to the production of this disorder. Other causes may also obstruct the appearance of this secretion, or interrupt its regular return at the proper time, and in this way derange the system directly by failing to remove the matter destined to contribute to a healthy state of the system, and also produce a sympathetic disturbance in other secretory functions and thereby indirectly aid in perpetuating disturbances first originating in this cause. This was made more apparent in two or three cases that came under my observation, in which, after other treatment had failed to afford any relief, the petechiæ disappeared directly upon the restoration of this evacuation, or upon its appearance after it

had been delayed. Other influences producing a similar state of the blood may no doubt develop this disorder. Thus uniformly indolent habits, little attention to cleanliness, and a free indulgence in eating and drinking, will produce a state of the blood resulting in petechial spots. An instance of this kind I have myself seen. And aged persons also, whose infirmities render them incapable of taking exercise commensurate with a full habit of living, are very liable to beget a morbid condition of the blood resulting in a scaly eruption and petechial spots upon the legs and hands. In the cases first mentioned we usually find a morbid and deranged state of the whole system, not only of the excerning organs but also of the assimilating functions, producing both a morbid and an impoverished condition of the blood. In these cases the more general symptoms of diseased action, and also a hemorrhagic tendency, will be found to exist. The relaxation and debility attendant upon such cases, the thin and morbid condition of the blood, and the state of the coats of the vessels through which it circulates, all combine to facilitate a discharge of the blood through the walls of its prison, not by disorganization or rupture of its tunics, but by percolation or exosmose. This result would be greatly favored by an excess of the red corpuscles which is generally found to exist in these hemorrhagic systems. But in other cases where there is an accumulation of morbid matter without any deficiency in the healthy ingredients of the blood, where there is a more passive state of the system, and the petechiæ show no tendency to occur to any considerable extent, I have no doubt that a careful examination would discover a rupture of the minute vessels involved in the petechial spots.

Diagnosis.—When treating upon the subject of scurvy, I remarked that this disorder was the only one with which it was liable to be confounded. So, conversely, scurvy is about the only disease that bears any resemblance to purpura, and the distinctive and characteristic symptoms of scurvy, which never occur in this affection, are sufficient to distinguish them without any difficulty, if care is observed in the investigation. Purpura does, without doubt, bear that relation to scurvy which results from a similar condition of the blood, with the exception that the elements furnished by the substances found to be curative in scurvy, and the want of which gives the latter disease its character, are not absent in the former.

Treatment.—In treating purpura it is equally important as in

other cases to ascertain the remote or exciting cause of the disease. If it has been brought on by irregularity in the menstrual secretion, the means best calculated to restore it should at once be adopted. Various emmenagogue preparations have been recommended, but as I have most generally been successful with the pill heretofore recommended for a similar purpose, containing iron, myrrh, guaiac and extract of macrotys, page 443, I could scarcely omit to mention this as the first to be tried. The pills should be given so as to produce a free condition of the bowels, guarding against a too active purging. Where the derangement of this function, as will generally be found to be the case, has been brought on by other disturbances, or by want of appropriate exercise, little will avail from any remedies if the influences that originally produced it are allowed to continue. In such cases, therefore, as much exercise in the open air as the patient can endure without excessive fatigue, should be particularly enjoined, while the diet should be nutritious, and the skin properly attended to. Frequent bathing, and especially the warm sitz-bath at night on going to bed, and the sponge-bath in the morning, followed in each instance by brisk friction sufficient to induce free capillary circulation, should also be prescribed. In addition to the emmenagogue medicine that should be given, the condition of the system naturally suggests the use of remedies calculated to answer the indication of general alteratives, and experience has pretty satisfactorily shown that the fulfillment of the indications in such cases is at least advantageous, if not indispensable to success. I have accordingly generally used the alterative sirup (*compound sirup of sarsaparilla*), and always with decided advantage, as in such cases the general symptoms improve for some time previous to the restoration of the menstrual secretion. As a substitute for this and the emmenagogue pill, the gin bitters (*compound tincture of tamarac*), with the addition of a small portion of aloes if there should be an unusual torpor of the bowels, will answer an excellent purpose, where the functional derangement of the uterus was long subsequent to the general disturbance and evidently only a symptom in the progress of the case. While the bitters were being given I have frequently directed a chalybeate, such as the tincture of the muriate of iron, as heretofore prescribed for other affections.

But if the disease has been brought on by over-eating and a want of proper exercise, or in other words by an excess of the

receipts over the expenditures of the system, you might expect to find a full pulse and a general state of plethora. In this case a spare diet, and free and active purgatives, will be necessary. The antibilious physic (*compound powder of senna and jalap*), with cream of tartar, or, if this state of the system has brought about an irregularity or suppression of the monthly discharge, a free dose of podophyllin and cream of tartar, may be given, say one grain of the former and a drachm of the latter, and, if this should not operate, should be repeated in six or eight hours. It will be necessary in these cases to repeat the purgatives once or twice a week, and at the same time use other measures calculated to act freely on the other secretions; such as the alterative sirup, efficient bathing, and active exercise, if the patient can bear it, in the open air. These measures will frequently be found efficient to correct the vitiated condition of the blood, and will also generally be followed by a restoration of the catamenial evacuation.

If hemorrhage from the bowels should be one of the attending symptoms, care will have to be observed in the administration of purgatives, and if a looseness or relaxation of the bowels exists, mild astringents and tonics will be found necessary. The decoction of statice limonium may be given in tablespoonful doses every second hour, or if this can not readily be obtained, a similar preparation of the geranium, or an infusion of raspberry leaves may be given in wineglassful doses, as often as the discharges may seem to require.

For local applications, I have found those cases presenting coldness of the extremities and but little or no soreness in the petechial spots, greatly benefited—the color changing to a more bright and florid appearance, and the warmth restored to the parts—by washing the parts affected twice a day in hot whisky and cayenne pepper. But when there is accompanying soreness and heat, great relief will be obtained by wrapping the parts affected with towels wrung out of cold water and changed once in three or four hours.

LECTURE LXVIII.

LOCAL DISEASES—CONTINUED.

Hemorrhage: General Considerations; Spontaneous Hemorrhages; Reference to various Divisions; Practical Divisions; Constitutional, Vicarious, Critical, etc; Condition of the Blood; Active Hemorrhage; Passive Hemorrhage; Causes; Treatment.

HEMORRHAGE.

Before proceeding to the discussion of the particular forms of hemorrhage, I wish to call your attention to the consideration of some important principles connected with the general subject. Hemorrhage is a discharge of blood from the organs destined to contain it, and may occur *spontaneously*, either from a morbid susceptibility of the organs, or an abnormal state of the blood, or in connection with other diseases. It may result from an extra effort or sudden exertion, and constitute the only evidence of morbid action; or it may occur spontaneously from the weakened condition of an organ, and present the only sign of local difficulty; or it may take place in the progress of some other disease, and constitute merely one of its symptoms. While few if any structures of the body are wholly exempt from hemorrhage, some organs are more particularly liable than others. Thus discharges of blood from the nose, lungs, bowels, bladder and uterus, are very common; but are less frequent from the serous surfaces, cellular structures, dermoid tissues, and in organs of more solid parenchymatous structure.

Accidental injuries, resulting in disorganization of the veins or arteries, belong properly to the province of surgery, and are therefore not included in this discussion. It is true that accidental ruptures may occur in some vessels of considerable size, in the stomach, or lungs, or other parts, which legitimately belong to our present subject; yet the great range of the class of affections I am now considering, presents no appreciable alteration of structure to show the origin of the effused blood. Thus we often have profuse discharges, even to a fatal termination, in which the most careful post-mortem inspection fails to discover any appreciable

structural lesion. Bichat and numerous other writers have shown that most cases of spontaneous hemorrhage are the result of what has been called an "exhalation from the ultimate ramifications of the minute blood-vessels which constitute the capillary system." If positive demonstration did not show beyond a doubt that profuse and exhausting evacuations of the kind actually occur, it might be difficult to reconcile such instances to our apprehension of the phenomena. In fact, a majority of the world at large, and probably some of the profession are impressed with the belief that nearly all hemorrhages of this kind depend upon a rupture, more or less important, in the coats of the vessels affording the discharge. But Bichat states "that he had opened the bodies of patients, who had died during an attack of hemorrhage, and that he had the opportunity of examining, with reference to this very point in pathology, the surfaces of the bronchial tubes, of the stomach, of the intestines, and of the uterus; that there never was the least apparent trace of any laceration or lesion of those membranes, although he took the precaution of carefully washing their entire surfaces, of allowing them to macerate in water, and at the same time of examining them with powerful lenses." But the most interesting case, more clearly demonstrating this doctrine, is recited by Dr. James Hamilton: "A woman was afflicted with enlargement and complete prolapsus of the uterus. The inverted womb is described as having hung down between her thighs as large as a great bottle; it could not be replaced; it was tense and hard, except during the periods of menstruation, which took place regularly. At those times it became soft and flexible, and the menstrual discharge was seen by numbers of medical men and students to issue, *guttatim*, from the exposed surface." But it is said that menstruation is not a morbid process, and therefore that it can not be taken as affording an explanation of the phenomena of diseased action. Instances however are not wanting where sanguineous exhalation has been observed from surfaces, unconnected with functional office. It has even been observed to take place from the skin, in which case a "dew of blood appears upon some part of the surface of the body, and which being wiped away, again appears without any perceptible change in the bleeding surface beyond a blush of redness."

Various explanations have been offered to account for these spontaneous discharges of blood without any appreciable change in the structure. But the most reasonable and satisfactory, I

apprehend, is either of the following: One is, that it takes place "through the same channels that pour forth the mucus, the serum, and the sweat." The other is, that in consequence of some disease, or of hereditary predisposition and accidental debility, the tissues making up the coats of the vessels become lax and loose. In this condition an obstruction to the circulation in those vessels arises from some cause; and then a preternatural accumulation and pressure ensue and continue until an exosmose of their contents takes place.

[A liquid exhalation tinged with the coloring matter of the blood may take place; but I assert that it is a physical impossibility for the red corpuscles to escape bodily from the vessels without a rupture. S.]

Authors have divided hemorrhages into *symptomatic* and *idiopathic*. But this, it appears to me, is a mere arbitrary division, based upon no very obvious distinction, as it is difficult to conceive a case of spontaneous hemorrhage that would not imply, or which would not result from, some previously existing morbid state of the system. It is attempted to found the distinction upon those cases which occur unconnected with a morbid state, in which the difficulty itself is the only abnormal action, and is then styled *idiopathic* hemorrhage; while the hemorrhages obviously connected with other diseases, such as fevers, etc., are called *sympathetic* or *symptomatic*.

Another division, of little more practical value, has been made by the older authors and retained by those of more modern date. They speak of *active* and *passive* hemorrhages. The first is based upon a supposed increase in the vital action, or those cases are called *active* in which there is a local or general excitement, with apparent association of vital action above the natural standard; while those are called *passive* which are associated with apparent weakness of the system and of the parts involved in the difficulty.

Other divisions have been made, as constitutional, vicarious, critical, periodical, arterial, and venous hemorrhages. These are important practical distinctions, indicating in many instances appropriate and successful modes of treatment.

Constitutional hemorrhages may be said to be of two kinds; those that have become from long continuance necessary evacuations for the health of the individual, and that can not be arrested without great risk of serious consequences, except by substituting the discharge by some other process, such we occasionally find in the

long-continued drain from hemorrhoidal tumors and uterine hemorrhages. The other kind is that peculiar tendency, which exists in some families, to exhausting and sometimes fatal hemorrhages, occurring from causes not usually sufficient to produce much loss of blood. One notable instance of this kind occurred in my own practice, in which a slight wound, yielding at the time of the accident no more blood than usual, apparently healed up by the first intention, but afterward issued in a hemorrhage. The patient was a young man, about twenty years of age, who had made a slight incision in the ball of the hand. It was bound up and had healed; but from previous experience with similar accidents in his family, and once in his own person, he was very careful of the wound, and also of any exposure of the general system. On the fourth day it began to bleed, after feeling for a few hours a sense of pressure and slight heat; and continued to ooze out gradually for two days, coagulating as it came out. At this time I was called, and found his hand presenting the appearance of a mass of fungus, which, upon careful examination, I discovered to be coagulated blood, but of a very fibrous and firm consistence. By constant pressure upon the arteries at the wrist, it was arrested, and in two days the fungus all came off, leaving the surface beneath perfectly well, and as smooth as the hand of a child, without even the appearance of a scar.

[In the true hemorrhagic diathesis there is doubtless a poor quality of blood arising from defective assimilation, and a tender and friable condition of the capillaries, the result of textural degeneration. The blood being bad the capillaries containing it can not long remain healthy. S.]

The *vicarious hemorrhages* are important to be observed, in order to appreciate the probabilities of the issue, and adapt our remedies to the case. Thus, a vicarious hemorrhage from the nose, as a substitute for those periodical discharges that sometimes occur from the bowels and other parts of the system, should not be entirely arrested at once, without making use of measures calculated to take the place of the original drain. It might, however, become necessary to restrain it when found progressing too far.

The hemorrhages which we frequently meet with, occurring as *critical* evacuations from the bowels and other organs, become interesting to the physician as prognosticating favorable or fatal terminations. And some *periodical* evacuations of the kind are especially important to be recognized, as without a correct appreciation of

their true character, they might be allowed to continue even to a fatal result, when with a proper understanding of their real nature they could be arrested by appropriate treatment.

Hemorrhages may occur from the peculiar condition of the system, or of the organs from which it proceeds; or it may be more immediately connected with the condition of the blood. Thus an organ in a predisposed and weakened condition would be more likely to suffer in this respect upon the occurrence of general inflammatory action, and especially in the event of local determination of blood. The weak point of the system is especially the one likely to be involved. Hence in a practical point of view it becomes important to understand this peculiarity of constitution in the treatment of other affections, as well as of those cases generally styled *idiopathic* hemorrhages. •

The *condition of the blood*, not only in its connection with hemorrhages, but also in its relation to other diseases, is a subject of the most profound importance to the profession and especially to their patients. I do not propose however to discuss the subject in this connection, as I have more fully considered it in its relation to inflammation, and have from time to time presented the most important points, having reference to its derangement in other affections. The doctrine of excess in the amount of blood as "one of the most fruitful sources of hemorrhages," I apprehend requires an important qualification to be successfully defended. It is akin to the doctrine that an excess of blood produces apoplexy, and seems to have been assumed from an imperfect apprehension of the whole facts in the two cases, being defended no doubt as the only convenient argument for the use of the lancet in either case. That the blood becomes abnormal from excess in some of its constituent principles, and thus favors the occurrence of hemorrhage, I have no doubt. But even in such cases hemorrhages are far more rarely observed than in instances of positive deficiency in the amount of blood. Thus uterine hemorrhages are far more frequently met with in persons of an exsanguineous condition than in those presenting an apparent excess, though it be in the disproportion of its component parts. So also epistaxis is far more frequent in anæmic subjects, than in the opposite condition of the blood. But the influence of a deteriorated state of the blood is too apparent in many cases to admit of doubt. Though even here our knowledge is too limited and imperfect to admit of much certainty, and when we attempt to reason on it, we have no assurance that our theoret-

ical conclusions will stand the test of future research and discoveries. Yet no facts in science are better determined than that any considerable deviation from the normal proportions of the combining, proximate principles of the blood must inevitably affect its circulation in the capillary tubes, even though the quantity or positive amount should not be increased or altered; that an excess even of its watery portions produces the same effect, and that while a certain plasticity is requisite to its free circulation in those minute tubes, any excess in this respect is equally detrimental to its capillary circulation. So also coagulability—a property dependent upon a well-known ingredient in its composition—is indispensably necessary to healthful circulation. The absence of this clotting property is the peculiar characteristic of some of our most malignant diseases, and it is this no doubt that produces the petechial spots in certain fevers and in scurvy. It should be remarked also that this fluidity or non-coagulability of the blood may be produced by various means. Thus it may be brought about by artificial means, or the internal use of certain medicines in health or during the progress of disease, or it may be produced by certain agents operating upon the nervous sensibilities of the system, such as some of the narcotic poisons, or by a stroke of lightning. There is another fact well understood as greatly modifying the circulation in the capillary tubes. I refer to the red globules contained in the blood. These globules are known to possess certain dimensions, which are greatly influenced by a variety of circumstances operating upon the system. They are subject to considerable change in size and quantity, and when thus affected often become the source of capillary obstruction. Thus it will be observed the condition of the blood is liable to be altered, by various causes, in its physical relations, in its chemical character, and in its vital properties; all or any of which greatly modify its circulation in the capillary vessels and have an important influence upon sanguineous effusion.

The condition of the system, and the symptoms attendant upon hemorrhages, vary greatly in different cases. Ordinary cases of hemorrhage will be recognized without any difficulty. But when it occurs within the inclosed cavities of the body, such as the abdomen, pericardium, chest or brain, it becomes a matter of inference from the general symptoms, which are not always satisfactory or reliable. But the ordinary evidences of exhaustion without any apparent cause, the attendant pallor and faintness, the condition of the pulse, the physical symptoms afforded in such cases where

effusion is liable to occur, such as fullness and fluctuation, and the symptoms developed by auscultation and percussion, where the difficulty exists in the pericardium or pleural cavity, will furnish grounds for tolerably safe conclusions.

In one or two instances when external hemorrhage takes place, it becomes a matter of some difficulty to decide from whence it proceeds, as whether it comes from the throat or lungs, or from the bladder or kidneys. But the different diagnostic symptoms will be presented when the individual forms of hemorrhage are discussed.

The character of the effusion is very variable, depending not only upon the condition of the general circulating fluid, but also upon the organ from which it proceeds, and the matter or other fluids with which it may be accidentally mixed. Thus it is sometimes altered by an intimate mixture with the urine, when it proceeds from the kidneys; it may be thrown from the stomach intimately blended with ingesta and secretions of that organ; and in passing from the bowels it may be mingled with their vitiated or natural contents, or be discharged in a pure coagulated or diffuent state. The state of the blood in the general circulation will influence its character as to coagulability and color. Blood rarely proceeds from the veins unless from ulceration of those vessels, or some other accidental rupture of their coats. Upon its dark or red, florid appearance has been based the error that it comes from the veins or arteries. It never proceeds from either set of vessels, unless they are ruptured from the causes I have mentioned.

The indefinite terms irritation and inflammation, to which I have often heretofore objected, have given rise to inadequate explanations of hemorrhage. I have used these terms, and shall continue to use them in these lectures, as they are frequently understood; but the real condition of the parts to which they are applied is entirely different from that properly expressed by those terms. Thus, if you wound a capillary vessel, or thrust a small instrument through its walls, a rush of blood takes place to that point from both directions, notwithstanding the influence of the impetus given to it by the heart. This is called irritation that invites a fluxion of blood toward the point thus affected. But thrust the same instrument merely into the *coats* of the small tubes, produce the same amount of violence but not so as to enter the cavity of the vessel, and the current of blood will go on uninterrupted as though nothing had happened. It will be seen, therefore, that irritation

does not express the true state of fact. [This is true, the blood flows to the puncture because there is an opening there. But a stimulant applied a certain length of time will cause a determination of blood to the part. This is the result of irritation. S.]

In cases of what has been termed *active* hemorrhage, a local determination and a consequent fullness in the vessels generally takes place previous to the actual discharge. Thus when hemorrhage is about to occur in the lungs, it not unfrequently happens that a sense of weight and oppression are felt previous to the appearance of the blood; yet a positive flow of blood has begun, as much as after it has fully appeared. There is a forward and retrograde current, and the blood thus continues to accumulate until it bursts through the adjoining tissues. These phenomena are accompanied by a diversion from the whole circulating mass, proportioned to the extent of the local difficulty and the susceptibilities of the individual affected. This is most clearly manifest in the coolness of the extremities, and a sense of coldness or chills is experienced over the whole system. These symptoms generally continue until the local difficulty is checked, when they are followed by febrile reaction. The condition of the blood in this form of hemorrhage is said to be somewhat peculiar, and different from that which exists in what is termed *passive* hemorrhage. In this the red corpuscles are said to be increased above their healthy or natural proportions, producing a large but more soft and spongy clot. It is not a condition of the blood favorable to general hemorrhage; consequently it requires some local influence to develop it, and is generally confined to one part of the system or organ. It occurs generally in those of full habits, but will always be found connected with a disproportion in the component parts of the blood, and a local predisposition to produce it.

The condition of the system is very different in what is termed *passive* hemorrhage, and the condition of the blood varies equally with the local and general phenomena. It more frequently occurs during the progress of other disorders, such as malignant fevers, dysenteries, or other affections in which a low state of the vital forces is attended by relaxation and debility, and a greatly altered and vitiated condition of the blood. The capillary circulation corresponds with the state of the general system. It is easily arrested, and its movements are slow and imperfect, presenting often a purple appearance on the skin. The condition of the blood in these cases is by no means well understood. It is said to be deficient in

fibrin, with an undiminished amount of red corpuscles and an excess of serum; presents a dark appearance; and forms an imperfect clot. These, so far as we are at present able to judge, may and no doubt do constitute its true condition; but it is a very remarkable circumstance that Magendie was able to produce at will, by the addition of a single medicinal agent, the precise condition of the blood here presented; the animal, on which the experiment was tried, dying with all the symptoms of malignant disease. It is quite certain however that, whatever the condition of the blood may be in these affections, the difficulty is not confined to one organ, but may occur in different parts and tissues at the same time, and that the main disorder is in the blood itself.

Either form of hemorrhage often constitutes a *critical* evacuation—portentous of good or evil results. In the more active forms it often affords relief to the local engorgement, and thus induces an effort of the system to a more vigorous action, which may go on to final recovery; while in the passive variety the discharge results in the removal of a portion of the noxious fluid, partly from the general system, but mainly from the local disorder connected with it, and in this way offers encouragement to the flagging powers of the vital forces, and with a simultaneous movement in the recuperative energies of the system, the patient recovers. But more generally the shock is too great, and the already waning and disheartened powers yield to the impetus thus added to the downward march of the system, which sinks exhausted and life becomes extinct.

The effect of hemorrhage upon the blood, unless profuse, is very different from that which results from general depletion. For while according to Andral the effect of spontaneous hemorrhage is merely to lessen the red corpuscles, and thus to remedy the condition which has much to do in the production of the difficulty, according to Magendie the abstraction of blood with the lancet diminishes the relative amount of the fibrin, and thus increases the difficulty you desire to remove, by diminishing the capillary circulation and adding to the local engorgement. In the one case nature has provided the means for the relief of the difficulty which accidental or hereditary causes have produced, while in the other case unnatural and artificial interference obstructs her recuperative plans, and hazards unfavorable results. In inflammation nature rarely resorts to hemorrhage to obtain relief, and if she does it is afforded; while if the measure is artificially applied it always

increases the local difficulty, though it may produce a temporary general calm. Carefully analyze the facts and you will find no exaggeration in the statements I have made.

Causes.—From what has already been said you are in possession of the main facts that have reference to the causes of hemorrhages. The condition of the blood and the state of the organ in which the hemorrhage occurs are to be chiefly considered in this connection. Yet most active hemorrhages are generally brought on by exciting causes. Thus any circumstance calculated to produce a determination of blood to an organ predisposed to hemorrhage may develop it; while all the determination that can be induced in a sound organ, and one having no previous hemorrhagic tendency, will fail to induce a discharge. It is, for instance, no unusual occurrence for the lungs to be inflamed, congested or even hepatized, and yet no hemorrhage take place. But where a predisposition is strong, very slight causes are sufficient to produce it. Thus any considerable exertion by which the lungs are unduly excited, such as blowing on a wind instrument, running, or loud speaking, may bring on an attack of hemoptysis. So also diminished atmospheric pressure, such as will be experienced on ascending a high mountain, and various other causes, may produce a similar hemorrhage; and so of other organs.

Intemperate habits either in eating or drinking, and want of appropriate exercise, may produce a condition of the blood favorable to attacks of hemorrhage. But the most commonly efficient cause is the influence of such habits combined with hereditary predisposition, and we most frequently meet with this difficulty in those who aggravate this predisposition by sedentary habits and improper indulgences. The hemorrhages of a more passive character have been sufficiently dwelt upon for a proper understanding of all that can be said with any show of science. I will only repeat that this form usually attends low grades of fever, dysenteries, petechia and scurvy, of all which the condition of the blood is now believed to be the essential cause.

Treatment.—I propose at this time to indicate only the leading general principles by which you should be governed in the treatment of these morbid symptoms. They can not be said to constitute positive disease, for, so far as I have considered them, they are merely symptoms of other diseases or morbid conditions. But whatever the difficulty may be, the first inquiry should be what has produced it? What cause, or combination of causes, has

brought about the state of the system which we are called upon to change or remove? Is it merely one of nature's efforts, that may be trusted without interference? Or has nature rallied a disproportioned influence, which has gone too far and requires to be restrained? Thus, if from repletion and want of appropriate exercise some principles of the blood have accumulated in excess, and a fullness of the vessels of the head occurs, and if the bleeding at the nose has taken place to an extent affecting the general system, measures should be immediately taken to stop it. But if it is merely a local plethora, without having continued so long as to affect the general circulation, the case may safely be allowed to continue until it ceases of its own accord. If the extent of the evacuation and the general manifestations indicate an excess in some of the constituents of the blood, a pretty free refrigerant cathartic will be necessary. But if it should be attended by a profuse evacuation with great local determination, diversion may be produced by ligatures to the extremities or by mechanical pressure, until a coagulum is formed, without the risk of the consequences often following abstraction of the vital fluid. In such cases a free hydragogue cathartic may be given. These measures or some portion of them, often become necessary in rapid cases of hemoptysis and uterine hemorrhages, and would be more especially applicable in hemorrhages in the brain, though the latter cases present very little hope of relief.

Various local applications have been recommended and used for the purpose of diverting or repelling the blood from organs or parts affected with hemorrhages. Yet no very satisfactory effects will be derived when the hemorrhage proceeds from internal parts. Thus cold water or bladders of ice have been recommended, and in some cases no doubt *seemed* to have a salutary effect. But since in other cases they have failed to produce even the least apparent good, there is ground to suppose that other influences might have offered the relief which has been ascribed to that measure. The most reliable of the local remedies is a free application of cups to the parts affected. Revulsive influences, such as hot fomentations and sinapisms, have a salutary effect in equalizing the circulation, and in this way no doubt may afford some advantage in such cases.

Of the internal remedies used or recommended for hemorrhages, few can be prescribed with that scientific certainty which is always desirable. Astringents are naturally suggested in cases of flowing from relaxed tissues of the vital fluid, yet they are far

from yielding the satisfactory results we would expect. Moreover, Magendie has shown that many of those substances abstractly supposed to be beneficial, and which are often used, immediately prevent the coagulation, when directly mixed with the blood, either out of the system or when circulating in the vessels,—a condition of all others most favoring hemorrhagic discharges. But there are remedies possessing but little if any astringent properties, that have been observed to exercise a uniform, controlling influence upon these evacuations, and which may and should be administered. Such are the sanguinaria, trillium, spirits of turpentine, salt and ergot; but these specific applications will receive attention when I come to treat of the different kinds of hemorrhage.

Other remedies, acting more particularly upon the nervous system, such as opiates, hyoscyamus, and others, have, under certain circumstances, a powerfully controlling influence upon sanguineous effusions, partly by their sedative influence upon the system, and partly by equalizing the circulation. Medicines also, producing relaxation of the general system, have often been observed to exercise an unquestionable influence upon evacuations of the kind. Hence emetics have with some physicians held a high rank as curative remedies in such cases.

For the more passive hemorrhages, our remedies possess, if possible, a more strictly empirical character than those recommended for the active kind. This, in the present state of our knowledge of the intimate changes of the blood in disease, is not a matter of surprise, and therefore the best we can do, until the specific influence of medicines upon the blood is better understood in these affections, is to prescribe upon general principles. Thus, in cases of uterine hemorrhage associated with a low grade of fever, where ordinary astringents might be inadmissible, astringent injections and a general restorative course may be resorted to, such as a decoction of Peruvian bark and trillium, and a generous diet, or the use of ale or porter may be prescribed in such quantities as the system will bear, and repeated according to the circumstances of the case. If not connected with irritation of the stomach, I have seen decided relief from small doses of capsicum. If the hemorrhage is connected with scurvy, the use of the remedies recommended for that affection, together with the diet proper in such cases, should be prescribed.

When hemorrhage occurs as a substitute for other evacuations, it should not be checked as immediately as though no influence of

the kind were operating upon the system. Thus, if it should be a periodical epistaxis dependent upon irregularity of the uterine secretion, our measures should be applied with a view to restrain the evacuation within the limits of safety to the patient, while our main reliance should be upon those means best calculated to restore the disturbed function upon which the existing, more apparent, and urgent difficulty is depending. The same course should be pursued in those cases of habitual hemorrhage of long standing, where the general state of the patient's health, in other respects, shows a disordered condition in which it might not be advisable to arrest the discharge at once. In these cases, alteratives and hydragogue cathartics may be used, if the patient can bear them, and an issue applied as near to the local affection as convenient.

What has been said in a general way of the constitutional hemorrhagic tendency, and of the measures applicable in that case, is sufficiently particular to answer my present purpose. But in those cases of constitutional hemorrhage frequently occurring, without any local accident, from organs naturally subject to such discharges, where from the condition of the blood we have reason to suspect a disproportion in certain of its elements, we are left to the uncertain action of a few remedies, tested only in a few cases, without any accurate scientific knowledge of their mode of action. Magendie, reasoning from the effect of iodide of iron upon the blood when drawn out of the system, advised an injection into the vagina of twenty grains of that drug, and says that it immediately checked the discharge, and that he should give it further trials. In the case recited by Dr. Otto, the sulphate of soda was prescribed with immediate relief, or at least was the only efficient remedy; and other cases have been found to yield in the same way, and seem to recommend that article.

Those cases of hemorrhage which return at stated periods, but are not connected particularly with irregularity of the uterine functions, should be suspected at once of connection with malarial influences. And you will rarely be disappointed in this conclusion upon investigation. In such cases the free use of antiperiodics will generally afford the relief desired. And in short, in the treatment of hemorrhages in general, the efficient cause of the difficulty, the influences that appear instrumental in its continuance, the condition of the system in general, and that of the organs involved in particular, the state of the blood as far as we are able

to judge from the knowledge we possess on the subject, should all and severally be inquired into, and, so far as possible, corrections should be made, in all these particulars, to the full extent that may be compatible with the laws of health and the efforts the system is making to right the difficulties in which it is involved.

[For active hemorrhage, caused or sustained by excessive action of the heart and arteries, I know of no remedy that can be administered internally, which is so efficient as the tincture of *veratrum viride*.
S.]

LECTURE LXIX.

LOCAL DISEASES—CONTINUED.

Epistaxis: Description; Treatment. Stomatorrhagia: Description; Treatment. Hematemesis: Idiopathic or Secondary; Loss of Blood varies in Quantity; Diagnosis; Causes; Treatment.

EPISTAXIS, OR HEMORRHAGE FROM THE NOSE.

Discharges of blood from the nose are among the most common occurrences connected with deranged action of the human system, but are generally so unimportant as to attract slight attention and cause very little uneasiness. In any case, however, it may be important to know how to arrest the discharge, and in some cases the life of individuals may depend upon such knowledge.

This difficulty is so conspicuous as to require but few words by way of *description*. But its source may be situated so far back that the blood may fall into the throat, and the discharge be mistaken for hemorrhage from the throat proper, or from the lungs; or it may be unconsciously swallowed during sleep, and creating a disturbance in the stomach, be thence ejected, and thus be mistaken for hemorrhage from the stomach. Discharges of blood from the nose most commonly proceed from the anterior part of the nostrils, and unless the individual is placed upon the back the discharge occurs directly from the nose. Generally the amount of blood is small, in some instances but a few drops, and after bleeding a short time ceases spontaneously. It occurs at all periods of life from mere childhood to decrepid old age, but is most frequently observed in children at, or a few years before, the age of puberty. When it occurs frequently and without any apparent exciting cause, other than such as may be connected with the general system, careful inquiry will often find some derangement of action in the general functions, or some abnormal condition of the blood. But in scrofulous subjects it is not unusual to find an abraded or ulcerated condition of the Schneiderian membrane. In other instances no appreciable lesion can be discovered and none probably exists, but

a morbid condition of the part will mostly be found, presenting a vascular and delicate appearance.

These cases are not any more dependent upon fullness of habit than other forms of disease; and in fact I have more frequently met with epistaxis in pale and delicate systems than in those of an opposite character. In either case, however, a sense of fullness is felt before the occurrence, which is generally relieved by the discharge. When the tendency to epistaxis is strong any trifling circumstances will often be sufficient to excite it. Thus, slight blows or injuries, active exercise or severe fatigue, hard and protracted study, great mental labor or sudden excitement, over-eating, sneezing or coughing, and in short any thing calculated in the least to disturb the parts subject to the discharge may produce it; even stooping over, or wearing a tight collar or cravat, may induce an attack.

It occurs sometimes as a critical evacuation, and again appears to be vicarious and affords relief to symptoms of disease that might become serious. Such instances will be preceded by a sense of fullness about the head, sometimes amounting to positive pain; a sense of heat and weight will be felt, and in some cases a giddiness and confusion of thought, and loss of vision for a few minutes may occur.

Epistaxis frequently occurs during the progress of fevers, sometimes in those of a low grade, as well as in others of a more active and inflammatory character, and in some instances to an extent threatening the life of the patient. It is a symptom very commonly attendant upon anæmia and scurvy, even in cases where the blood is so impoverished as scarcely to stain a white cloth.

Epistaxis may occur unconnected with any general derangement of the system, or unhealthy state of the blood. Thus it may result from a peculiar, natural vascularity of the Schneiderian membrane, or from polypus of the nose, or disease of the osseous structure of that organ, producing an injected state of the vessels, and from any slight causes producing irritation. Under such circumstances it will often follow a picking or blowing of the nose.

Those cases of epistaxis associated with low grades of purpura, scurvy, and the like affections, present more the character described as belonging to passive hemorrhage, coming on without any premonitory feelings and often without any apparent exciting cause. The hemorrhage may thus continue to recur at irregular periods lasting but a few minutes at a time, and often increasing in frequency and amount until the life of the patient is jeoparded.

Treatment.—Few of the ordinary cases of epistaxis require any attention from the physician. But it sometimes becomes so habitual in persons at about the age of puberty as to endanger the future health, and there are also cases connected with other affections which, from the frequency and extent of the discharge, require prompt and appropriate treatment. Thus the repeated discharges, occurring at a period of life when the amount of blood usually formed is required to supply the demands for the growth and repair of the system, may so impoverish the quality of that fluid as to render it unfit for such purposes. Upon careful inquiry such cases will generally be found to depend upon irregularity of habits, such as eating too rich food or too much in quantity, and taking insufficient exercise; and to afford permanent relief it is of the first importance to attend to the circumstances which may seem to have produced the difficulty. It may first have been induced by accident or some extraordinary exertion, or by becoming overheated, and thus by repetition a habit may be formed. In these cases more than usual care should be advised in reference to every influence calculated to favor its occurrence; such as regularity and moderation in eating, sleeping and exercise. The whole surface should be bathed every morning in cold water and followed with brisk friction, to secure a complete reaction and thus promote an equilibrium in the circulation of the capillary system. In addition to this I have also realized the most satisfactory results from showering the back of the head and neck every morning when first up, producing immediate reaction by friction. This course will rarely fail to break up habitual epistaxis in the cases I am considering. And it will be equally applicable in these cases of vicarious hemorrhages of the nose substituting in part or altogether the menstrual discharge; but in addition, such cases will require the use of those particular remedies calculated to restore this function. I have frequently prescribed with very good effects the emmenagogue pill heretofore recommended, with the use of warm diaphoretic teas, and bathing the feet in warm mustard water, or the use of a warm sitz-bath, at about the period for the regular return of the monthly evacuation.

For the treatment of epistaxis when connected with fevers, purpura, scurvy and other diseases in which there is a similar condition of the blood, the general measures recommended for those several affections will be appropriate.

In every case of hemorrhage from the nose that has come under

my observation, the blood has proceeded from that portion of the Schneiderian membrane which lines the nose proper, and can be arrested by external pressure upon the nose. This, in many instances, can be done by patients themselves, by grasping the nose with the thumb and fore finger, one on each side, as high as the lower extremity of the bones, or as high as compression of the cavity can be made. This can be done if necessary, by an assistant. The compression should be firm enough to close the nasal passages, and to interrupt the flow of blood. In some cases it is necessary, in order to secure success, that the pressure should be made as high up as possible to admit the closing of the cavity. In order to arrest the discharge completely the pressure should be uniform and steady, and should be continued for some minutes, when it should be slowly relaxed so as to allow the parts to resume their natural condition gradually and without much disturbance. Sometimes it will be necessary to continue the pressure for half an hour or longer. In any case, if the bleeding returns, the compression should be resumed, and whether it be continued a long or a short time, the patient should be specially directed to be exceedingly careful not to disturb, by blowing or otherwise, the coagulum that has been formed. In very severe cases, where it is specially important to guard against a return of the hemorrhage, patients should be directed to keep entirely still, and be placed in a semi-recumbent posture, and, if not otherwise contra-indicated, to take a seidlitz powder or some other mild aperient. This method can not fail to relieve all those cases where the blood flows externally from the nose, as in that case it must proceed from the anterior portion of the nasal cavity.

I need scarcely dwell upon the various other plans which tradition, both oral and written, has handed down to us, which nearly every old nurse is familiar with, and some of which are to be found in some of the most respectable works on the practice of medicine. Such are the directions to "suddenly raise one or both arms perpendicularly upward, and to retain them for a short time in this position," while the patient is standing; "to introduce a portion of *hog's intestine*, *properly prepared* and closed at one end, deeply into the nostril, then to inject some cold water forcibly, and tie the other extremity of the tube;" to wear a red string round the little finger, or, which is said to be more effectual, round the neck, etc. The method I have directed being universally *safe* and *certain* in the case, I have supposed no other will be needed.

But where the blood passes down into the throat when the individual is in the sitting or erect posture, it would be conclusive evidence that it proceeded from the posterior nares, and could not be relieved by the method I have described. In this case the various methods that may be thought advisable may be tried. Showering the head with cold water has often succeeded when it proceeded from the anterior part of the nose, and would undoubtedly have a similar effect in this case. Ice also has been applied to the back of the neck for a similar purpose. Various astringent injections, such as the sugar of lead, alum, catechu, etc., or ice-water thrown into the nostril with a syringe, have all been recommended, and probably have all been followed in some instances with relief, as many instances of spontaneous decline are no doubt familiar to every physician. In a severe and protracted case of this kind, I should have very little confidence in any of these articles, unless it were the cold water, as Magendie found most of them to prevent coagulation of the blood, while the contrary effect is the one from which benefit could be expected. A reliable remedy, no doubt, would be internal pressure by means of various expedients that have been and may be recommended. Among them may be mentioned a soft, dry sponge introduced either through the nostrils, or into the month and drawn up by means of a string previously passed through the nostril. This can be done by pressing the string up into the nostril in the form of a wad, when by a full and sudden inspiration exclusively through that nostril the string will be drawn in and carried below the soft palate, where it can be seized and drawn out through the mouth. The sponge being firmly attached to the cord can be drawn into the posterior nares. I have often seen boys go through this performance by way of sport, holding one end of the string from the nose and the other from the mouth. Among other expedients which have been proposed, I will suggest that a small bladder in a soft condition, having a quill attached to the small end, can be introduced through the nose into the posterior nares, and then being inflated a sufficient amount of pressure can be attained, by pulling upon the external extremity, to arrest the hemorrhage. It can be easily removed by allowing it to collapse.

Whatever method is employed to arrest the bleeding, either from the anterior or posterior nasal cavity, it will be well to bathe the feet in warm mustard water, and take other measures calculated to equalize the circulation.

STOMATORRHAGIA, OR HEMORRHAGE FROM THE MOUTH.

Hemorrhage from the mouth proper is of very rare occurrence, or at least is rarely sufficient in amount to render its consideration worthy of much attention. But considerable discharges of blood from the throat, gums, and other parts do sometimes take place, and being liable to be mistaken for hemoptysis, or hematemesis, a short discussion of the subject is necessary and proper. In this connection also some remarks will be appropriate in regard to the hemorrhage which frequently follows the extraction of teeth, is sometimes alarming, and occasionally even fatal in its results.

There is little difficulty in these cases in determining whether the blood proceeds from the mouth, as all its parts are subject to ocular view. The blood is generally mixed with the saliva in small quantities and spit out as it accumulates, or if very profuse it may collect faster than it can thus be discharged and run out in a stream. By freely washing out the mouth the origin of the blood can be seen. Occurring at night it might pass down into the stomach and be discharged from the bowels; or by producing gastric irritation be thrown off by vomiting. By coming from the posterior fauces or pharynx, and being thus thrown off, it might be mistaken for bleeding from the lungs. This is very apt to be the case if the patient should at the same time be troubled with a cough, but by carefully recognizing the distinction between the two affections but little doubt should remain. The main reliance, both where the blood has passed into the stomach, and where suspicion arises of a pulmonary origin, must be upon the general symptoms in every case. The absence of the symptoms which characterize gastric disease, the history of the case, and a careful examination of the throat and fauces, will generally be sufficient to decide the case in point. When more or less accompanying cough creates a suspicion of an origin from the lungs, the absence of the general symptoms of pulmonary affections, or, if they do exist, the color of the blood will generally be sufficient. In hemoptysis the blood is more florid and frothy, often mixed with mucus, and is preceded by a cough immediately before or upon its first appearance. It might, without proper care, be mistaken for that form of epistaxis proceeding from the posterior nares. But in this case it will generally be felt passing down into the throat, and its origin be thus determined.

Hemorrhage from the mouth sometimes accompanies scurvy,

and in rare instances becomes so profuse as to be alarming. It is said, also, by Dr. Wood to be "frequently produced by inflammation and ulceration, as in the mercurial sore mouth." But I have most commonly found it following the extraction of the teeth, in two or three instances exhibiting the hemorrhagic diathesis in a striking manner, and being very difficult to control.

Treatment.—When the blood proceeds from the throat, and in such quantities as to require attention, a gargle of a decoction of hydrastis and salt will be found a tolerably reliable remedy. The same may be applied by holding it in the mouth in cases where the bleeding is from other parts of the mouth or gums. But, if it can be applied to a bleeding surface, a fine powder of a species of *solidago* will give the most immediate relief. I have seen a number of cases where the hemorrhage was exceedingly profuse, so much so indeed as to justify the suspicion of a wounded vessel of considerable size, in which the bleeding was arrested in a very short time by filling the wound with the fine powder of the leaves of the *solidago rigida*. As a general thing I have derived very little if any benefit from the use of ordinary astringents in any form of hemorrhage, unless they also possessed some stimulating properties. But I have seen a profuse bleeding consequent upon an extracted tooth arrested by using the *solidago* powder. In the absence of this remedy, I have used very strong salt-water with complete success, which may be applied by filling the cavity made by the extracted tooth with a saturated sponge; a small cork may be placed over it endwise and firmly held by closing the jaws. It may be necessary to support the under jaw by tying a folded handkerchief under the chin and over the top of the head. This should be retained for some time; in one instance I allowed it to remain all night. In any case care should be taken not to remove for a day or two the coagulum formed in the cavity, as the hemorrhage is liable to return.

When hemorrhage from the mouth is connected with the general health of the patient, the primary consideration, after checking the flow of blood for the time being, should be to correct this as far and as fast as the circumstances of the case and our knowledge of means will permit.

HEMATEMESIS, OR HEMORRHAGE FROM THE STOMACH.

The literal signification of hematemesis is vomiting blood. But to constitute hemorrhage from the stomach it is not necessary that

vomiting should take place. Indeed it frequently occurs without any such event, the blood turning down into the intestines and thus passing off. The term as applied to gastric hemorrhage is incorrect in another respect, as blood may originate from other parts, find its way into the stomach, and thence be rejected by the act of vomiting. The technical term *gastorrhagia* has been employed as more strictly expressing the nature of the disease; but this is objected to by some authors for the reason, more especially, that it does not indicate the true pathology of the disease. Suffice it to say that the disease I am considering is an accumulation of blood in the cavity of the stomach.

Hemorrhage of the stomach may occur as an *idiopathic* affection, or it may *result from other diseases*. The actual development of the disease is usually preceded by disturbance in the digestive organs, such as uneasiness in the stomach, loss of appetite, a sense of fullness in the epigastrium, some tenderness on pressure, acid eructations, and finally shooting pains extending into the hypochondria and sometimes into the lungs. In some cases the eruption is preceded by general uneasiness, accompanied by a chill, and followed by febrile reaction. The accumulation is generally associated with slight giddiness and nausea, and a peculiarly pale and haggard expression of the countenance and depression of the pulse. These symptoms gradually increase until the accumulation becomes too great for the stomach longer to tolerate, and is ejected by vomiting, or passes down into the bowels and produces diarrhea, though the former is far the most common result. In some cases, however, the only symptom that precedes the ejection from the stomach is a slight nausea, which may perhaps have continued only for a short time. After the vomiting has ceased, patients often become easy, and but for the alarm consequent upon the discharge of blood would feel little more inconvenience than naturally attends the loss of blood. Frequently there is but the one discharge, and the patient immediately recovers, if it is an uncomplicated case, or if connected with other disorders the case may progress to a fatal or favorable termination without further manifestations of the kind. But not unfrequently there are repeated vomitings with no other alteration in the case than the slight relief afforded by the discharge, and the gradual exhaustion attendant upon the loss of blood, until the hemorrhage is arrested or the patient sinks from exhaustion.

Hematemesis is sometimes associated with affections of the liver

and spleen, as shown by the yellowness of the skin and eyes, costiveness, tenderness, and pain upon pressure in the hypochondriac regions. These cases generally mark the attack as one of great severity and far more danger, and often present symptoms of depression corresponding to the gravity of the attack, such as a cold sweat, rapid pulse, often nearly or quite imperceptible at the wrist, and finally partial insensibility, or coma if the case is to prove fatal. If the hemorrhage from the stomach is a mere symptom in the progress of low grades of febrile affections, the system will sensibly manifest the shock by symptoms of exhaustion, which may increase very rapidly and the patient sink from the depression; or reaction may gradually take the place, and a favorable change in the aspect of the case date from the discharge of blood. It may therefore be considered in any event a critical evacuation.

The *quantity of blood* evacuated varies greatly in different cases, from the smallest recognizable amount to half a gallon. A pint at once, and repeated a number of times, is no unusual amount. The appearance of the blood ejected also differs, depending upon the general condition of the blood and the amount discharged. Where the amount is large and the accumulation has taken place suddenly, the color is lighter and more fluid. But where it has remained some time in the stomach, its appearance is more dark and coagulated. The clot, however, rarely presents the firm character usual to healthy blood, but is diffuent and often discharged in irregular masses. In malignant diseases the blood is mainly deprived of coagulability, and often presents a dark, dirty, and partially decomposed appearance. This is particularly the case in yellow and other low grades of fever involving the gastro-intestinal mucous surfaces. It is now pretty generally agreed that the black vomit is nothing more than partially decomposed blood, partaking very much of the mass of the circulating fluid from which it is derived.

I have heretofore said that cases in which the blood originates from the posterior nares or throat, finds its way into the stomach, and is thence discharged or thrown up, might be mistaken for hemorrhage from the stomach. In this case it will usually present a firmer clot and not so dark an appearance.

It is often difficult, where blood is evacuated from the bowels, to determine satisfactorily whether it has its origin in the bowels or stomach. The attendant symptoms throughout the progress of

the case will have to be carefully considered to determine that question. If there were gastric fullness and tenderness, with considerable uneasiness at that point, and a red tongue, it would be reasonable to infer that it had its origin in the stomach. But, on the contrary, if there were fullness, tenderness, and other symptoms, such as diarrhea and protracted irritative fever, the inference would be that the blood had its origin from existing disease in the bowels.

Hemorrhage from the stomach may result from suppressed or otherwise irregular menstrual secretions, and thus occur with regularity at certain periods. It may also result from suddenly suppressed hemorrhoidal discharges which had previously existed for some time.

The vicarious discharges of blood from the stomach, and the occasional attacks that result from chronic disease of the stomach, are not generally dangerous, though they do occasionally prove suddenly fatal from loss of blood. But cases of hematemesis connected with low grades of fever may always be considered critical in their character.

Diagnosis. — The sanguineous effusions for which hemorrhage from the stomach is liable to be mistaken, are hemoptysis, bleeding from the throat and nose, and discharge of blood from the bowels.

It will readily be distinguished from pulmonary hemorrhage by the darker appearance of the blood, and by being ejected by vomiting, while in hemoptysis the blood is thrown off by the act of coughing, and is more florid and frothy, and is never coagulated. Besides, symptoms of pulmonary disorder will exist in the one case, and those of a gastric character in the other.

In hemorrhage from the nostrils and throat, its origin will generally be seen, or if not apparent, but little difficulty will exist in determining the source from the attendant circumstances. But where it has been unconsciously swallowed and afterward rejected by vomiting, you will have to rely on the absence of those symptoms peculiar to the stomach other than those produced simply by the accidental presence of the blood. When blood is discharged from the bowels, you will of course have to rely on the local symptoms and the attendant circumstances to determine whether it has its origin from the stomach or bowels. In the former case, the blood will be more intimately blended with other egesta, and very materially altered in character.

Causes. — Various accidental causes, in no way connected with

the general system, may be mentioned as occasionally producing hematemesis, such as violent straining during the operation of severe and irritating emetics, particularly tartar-emetic; severe spontaneous vomiting, sometimes developed during the cold stage of intermittent and remittent fevers; and irritating substances taken into the stomach accidentally or otherwise, such as caustics and other poisons. It has been produced by a large amount of cold water taken when the system was heated. It is very common with intemperate drinkers, especially upon the occurrence of other diseases, or when substances are taken into the stomach that tend to produce local engorgement, or weaken the action of the capillary circulation in the mucous membrane. It may be produced also by severe falls, by blows upon the stomach, and, where a predisposition exists, by a sudden muscular effort. It is also produced by congestion of the stomach resulting from the suppression of habitual discharges, and may then be regarded as a vicarious hemorrhage.

Various organic affections of the stomach and other organs with which it lies in contact, are often productive of hemorrhage. Thus in cancerous affections of the stomach, involving important blood-vessels, though they are not readily reached by the ulcerative process, severe and often fatal attacks of hemorrhage take place. Or it may result from an abscess in the cellular structure of the stomach, the discharge of which may be accompanied with hemorrhage more or less copious.

It may result from congestion of the liver and spleen, from which obstruction and engorgement in the stomach always follow. This is very apt to be the case in severe and protracted cases of malarial fevers. The intimate relation existing between the liver and spleen and the stomach, through the medium of the circulating fluid, which I need not here describe, renders congestion and capillary engorgement in the stomach, as well as in those organs themselves, a very common occurrence; and hence hemorrhage from the stomach is no uncommon symptom in affections involving those two organs.

What has been said of the origin or mode of escape of blood in general, fully applies to hemorrhage from the stomach. Its origin in this form of hemorrhage is perhaps more frequently from disorganized vessels than in most other instances. But probably the most common direct source of the blood in this form is from exhalation resulting from local engorgement, either connected with derangement of the blood, or as a consequence of local determina-

tion produced by intemperance in eating or drinking, or other irritating substances taken into the stomach.

These facts are well-established from the *post-mortem* developments connected with the disease. In most cases, the only abnormal appearance that will be discovered is the usual engorgement attendant upon chronic affections of the stomach, which is sometimes confined to the mucous membrane, but in other cases appears in the submucous cellular tissue. In disorganized states of the stomach, occasional instances of severed vessels will be found, though it by no means follows that the mode of its origin, in many cases of structural disease, is not by exhalation.

Treatment.—In the treatment of hematemesis there are some apparent advantages not pertaining to other forms of hemorrhage. In this case, from the direct local application of styptics to the source of the blood and the general influence of hemostatic remedies on the system, we might reasonably expect more prompt relief than is realized in other cases. Yet the uncertain effect of most remedies used to arrest hemorrhages does not justify the expectation of much more success from medicine in this than in other forms of hemorrhage. Fortunately however, hemorrhage from the stomach does not ordinarily show either very great violence or very persistent symptoms.

In all severe affections a great degree of quiet and usually the recumbent position are as necessary for the comfort of the patient as for the relief of the disease. In few other affections are these measures more important than in hemorrhages, not only for the purpose of keeping down undue arterial action, but also to allow coagula to form at the immediate origin of the blood, and thus block up the outlets for its discharge. In cases unconnected with other affections, and accompanied with much pain and gastric irritability, a large cup, or, what is more effectual, a large-sized tumbler in which the air is exhausted with a light lock of burning cotton, may be applied immediately over the stomach, and it matters but little whether you scarify or not, as but little blood can be obtained at this place. This may be followed with hot fomentations frequently changed. Or, if it is not thought necessary to apply the cup, the skin may be thoroughly stimulated with spirits of turpentine and friction, or by the application of a large sinapism. In these cases it is very desirable to keep the stomach as quiet as possible, and to be certain that no medicine is administered calculated to excite irritation or produce vomiting. To

answer this purpose small doses of morphia, say one-eighth to a fourth of a grain may be given every two hours until the indication is fulfilled. The acetate of morphia should be used in these cases as it exercises some specific influence on the coagulability of the blood. At the same time an infusion of peach leaves, or twigs if more convenient, and raspberry leaves may be given in two-ounce doses every hour, and the patient may be allowed to take occasionally a swallow of ice-water or a small quantity of pulverized ice.

If the attack should come on shortly after a meal and the contents of the stomach are not completely ejected, or if there are evidences of other accumulations in the stomach likely to add to the existing difficulty, a mild but speedy emetic should be given. The infusion of lobelia and cupatorium is generally to be preferred, as its action is quick and soon through with, while its operation creates as little disturbance, either local or general, as any that can be given. After its operation the stomach should be immediately quieted by the external and internal measures just described.

These measures should be assisted by a purgative injection. This may be composed of four ounces each of castor-oil and molasses, a drachm of spirits of turpentine, and a gill of warm water, which should be thrown far up the bowel with a gum-elastic tube and a force-pump. If not effectual it may be repeated.

If excessive irritability of the stomach exists, and the fluids ejected present an acid character, small doses of an infusion of the compound powder of rhubarb may be given and will rarely disappoint your expectations in such cases. It should be given in small doses, say two teaspoonfuls every half-hour, while almost every other medicine and in fact every thing else should be withheld.

But in cases presenting more evidences of an atonic condition of the stomach, few remedies will be found as effective in arresting the exhalation, and allaying the general disturbance of the system, as small portions of the acetate of morphia and Cayenne pepper, given in doses of one eighth of a grain of the former and one grain of the latter every hour until relief is obtained. At the same time a decoction of *prunus virginiana* (wild-cherry) bark may be given in two tablespoonful doses every hour.

When the attack appears to have been induced by morbid action in the liver or spleen, and evidences of obstruction in the portal

circulation exists, and when inactivity in the biliary function is evinced by a sallow skin and yellow eyes, in addition to such of the other measures as the urgency of the symptoms seem to demand, a pill composed of podophyllin, leptandrin, and extract of taraxacum may be given night and morning, or one at night only if it is found to act sufficiently upon the bowels; and this should be continued until the indication is fulfilled.

Hemorrhage from the stomach apparently connected with or resulting from irregularity or suppression of any natural or habitual evacuation, should be treated with the measures already mentioned, or such of them as may be demanded. And in addition immediate resort should be had to such medicines or other measures as are best calculated to restore those evacuations, or substitute such other depurating discharges as may appear most nearly allied to them or may be most effective for this purpose. If the monthly terms are deranged, emmenagogues should be given with other measures adapted to restore this secretion. If hemorrhoidal discharges that have existed for a long time have been arrested, free purgatives and cupping the lower portion of the spine should be resorted to. Or if the attack has resulted from translated eruptions or rheumatic affections, resort should be had to counter-irritation, cupping the spine, hydragogue cathartics, and other remedies calculated to remove from the system the peculiar sources of disturbance in the original disease.

In every modification of the affection the demands for food should be particularly attended to. If the patient has no appetite, nothing but a very simple fluid diet should be allowed, such as gruel or rice water, and this only in small quantities when the stomach is irritable. But as the symptoms disappear, and the stomach manifests demands for food of a more substantial character, weak broths, beef tea, buttermilk and light bread, and such other articles as the habits of the patient suggests, should be allowed.

In cases of great debility and exhaustion a more stimulating course may be required. In such cases wine whey, or small portions of ale should be given three or four times a day, and mild but unirritating tonics may be used. A decoction of wild-cherry bark, or of ptelea, stands first in this class of medicines for such cases, and may almost always be given without any fear of increasing any local irritation that may still remain.

LECTURE LXX.

LOCAL DISEASES—CONTINUED.

Hemoptysis: General Remarks; Predisposing Circumstances; No Age exempt; General and Diagnostic Symptoms; Causes; Prognosis; Post-mortem; Treatment.

HEMOPTYSIS, OR HEMORRHAGE FROM THE LUNGS.

The conventional meaning of the term *hemoptysis* is entirely different from its original signification. The former restricts it to the discharge of blood from the pulmonary air-tubes, while the latter strictly applies it to the evacuation of blood from the mouth, whether it proceeds from the throat, stomach or lungs, literally *spitting blood*.

A highly vascular surface, as extensive as the bronchial mucous membrane, and subject to such various obstructing influences, could scarcely be expected to escape the frequent sanguineous eruptions common to most mucous tissues. The peculiar liability of the pulmonary organs to capillary congestion, and their frequent exposure to irritating influences producing that result, such as vitiated air and mephitic gases, or undue exercise of the lungs, render hemoptysis in those parts of more frequent occurrence than in most other parts of the human system. Subject as the bronchial mucous surfaces are to causes producing no small obstruction in the circulating vessels, we are certainly justified in concluding that hemoptysis does not occur as frequently as might be supposed, and therefore that engorgement of the bronchial vessels often exists without producing sanguineous exhalation. Yet it is by no means certain that extravasation does not exist to some extent, though it is not shown in the expectoration. But where effusion has taken place to any great amount, it will rarely fail to be made manifest. It is supposed, and no doubt correctly, that those extensive obstructions constituting pulmonary apoplexy must be the result of bloody effusion into the minute bronchial tubes and cellular substance of the lungs.

There is, perhaps, *no period of life entirely exempt* from hemopty-

sis, under circumstances favorable to its development. But the time of life at which it most frequently occurs is from about the age of puberty, or shortly after, to the middle of life, or that period during which tuberculous affections are most generally developed, and is owing, no doubt, to the obstruction thereby produced.

Symptoms, General and Diagnostic.—I have stated, in treating of another subject, that discharges of blood from *other parts* were liable to be mistaken for hemoptysis; and therefore that individuals, upon discovering blood mixed even with the saliva, are apt to be alarmed and suppose their lungs are involved. But, generally, no great difficulty will be experienced in discovering the source of the hemorrhage, by an examination of the mouth, by the manner of its discharge, and by its appearance. The discharge from the lungs is generally preceded by a brackish or salt taste in the mouth for a few minutes before its appearance, and is then generally expelled by more or less cough.

The quantity discharged varies greatly in different cases, and its appearance also varies according to the amount discharged, and the length of time it has remained in the lungs, or that has elapsed after its expulsion. In some cases the amount thrown off is large, producing in a very short time the most exhausting debility, and sometimes gushing out so rapidly as almost to produce suffocation. In other cases it amounts to a mere streak mixed with the mucous secretion. Thus it varies from the least amount that can be detected to a quantity sufficient to produce suffocation and death.

The physical appearance of the blood also varies in some respects to an equal extent with the quantity. When the amount discharged is large, the color is a bright scarlet, and the blood itself is mostly in a fluid state. When the discharge has come on gradually and is suddenly increased, portions of it will be coagulated, and when collected in considerable quantities, the upper surface will present a frothy appearance. But when only a small amount at a time is discharged, it will not present so bright or scarlet an appearance, and will generally be mixed, partly in a fluid and partly in a coagulated state. When, however, the active form of the attack has subsided, and the discharge is effected by considerable cough, the whole amount will present a dark and clotted appearance. But when it is mixed or blended with the mucous secretion, it is more fluid and not so dark. This character of hemoptysis indicates that the blood comes from the minute bronchial vessels or air-cells of the lungs. In some instances the

whole discharge occurs in a very short time, while in others it continues for hours somewhat freely, and then a bloody expectoration may follow for a number of days. Sometimes a slight bloody expectoration occurs every day for a long period without amounting to any considerable quantity in all.

Hemoptysis itself is not generally an alarming occurrence, as it not unfrequently affords relief to an existing engorgement of the pulmonary organs productive of embarrassment and distress. But when it is portentous of more serious pulmonary disorder, or is indicative of a predisposition to disease of the lungs, it is to be looked upon with fear.

Hemoptysis, as generally understood, is not confined to any particular portion of the pulmonary apparatus, but may occur either from the larynx, trachea, bronchial tubes, or proper air-cells of the lungs. It however very rarely occurs from the larynx in any amount worthy of much notice. In chronic laryngeal affections, involving the cellular structure from ulceration, it is not uncommon to see slight streaks of blood in the matter thrown off. The origin of the blood in these cases will be readily determined from the general symptoms of the local affection, as well as from a stinging or tickling sensation experienced in the larynx. But as such cases tend to involve the lungs in serious disease, if not early relieved, it may be inferred where this event does follow, that the primary source was in the deep-seated portion of the lungs.

But the bronchial tubes are the most common source of hemorrhage in the affection I am now considering. From the connection in which the term is used by many members of the profession, the *rupture* of an important blood-vessel seems to be understood as the origin of the blood in such cases. But the most careful observations have generally failed to detect any lesion of structure in the blood-vessels, even in those cases in which vomica or cavities were found to exist, the blood-vessels in all cases resisting encroachment longer than any other parts. The inference, therefore, is irresistible, that blood escapes from the vessels in which it circulates by a kind of exudation or exhalation. In cases of the most profuse and rapid discharge, the mucous membrane is found to present no other alteration in its structure than a mere engorgement of its vessels, and in some instances the lungs are free from tuberculous deposits and other disease, except the engorgement referred to.

The effect of bronchial hemorrhages upon the respiratory function is often very embarrassing, especially if profuse, producing

dyspnoea and obstruction with a tickling and troublesome cough. A gurgling sensation will be experienced, and, when the hemorrhage is very profuse, a sense of suffocation and distress will be complained of, often causing great agitation from the combined action of all the muscles concerned in respiration. Blood will be ejected from the nose and mouth, and nausea and vomiting will follow from the convulsive efforts for more free respiration. When vomiting occurs, the difficulty might be mistaken for hemorrhage from the stomach, but should readily be distinguished by the evidences afforded by auscultation.

There is little doubt that exhalation often takes place in the more minute bronchial tubes without being evacuated, thus constituting what has been termed pulmonary apoplexy. In these cases there will not be much cough, and but little constitutional excitement; but the physical symptoms clearly point out the character of the difficulty; such as a perfect dullness, and the absence of any respiratory sound whatever. A few cases of the kind have occurred in my own practice, and the restoration was slow and gradual. It is inferred that the exhalation is confined to the smaller bronchial tubes and minute air-cells of the lungs, from the fact that every symptom of the supposed obstruction exists without any expectoration; whereas if the blood were exhaled into the larger bronchial tubes it would be thrown off.

Instances do occur however, when no doubt can exist that the ulcerative process has destroyed the coats of the arteries, and then large quantities of blood are passed, through the openings thus made, into the bronchial tubes and discharged. When this does occur, if the disorganized vessel is of considerable size, the patient sinks from the profuse loss of blood in a short time.

When the origin of the blood is from the mucous membrane of the pulmonary air-tubes, it rarely becomes profuse, but is shown in the mingling of the exhaled blood with the mucous secretion, presenting an appearance not very unlike the expectoration in common cases of pulmonitis. But we have every reason to suppose that the cases of hepatization, occasionally found, involve the air-cells, and are nothing more than a sanguineous exhalation not discharged, but blocking up the small bronchial tubes and air-cells of the lungs. The substance of the lungs in these cases presents a dark mahogany color of a consistent and granulated texture. It is no uncommon occurrence to find circumscribed portions or lobules of the lungs hepatized, while the surrounding portions

present a healthy appearance. In such cases the exhaled blood is not confined to the air-tubes of the lungs, but the pressure from the accumulation and distention of those tubes, ruptures the air-cells, during the percolation, and the blood becomes diffused into the inter-lobular cellular substance of the lungs, thus obstructing the expansion of the part as perfectly as though it were composed of a solid substance. In cases connected with a low grade of fever, in which the blood is in a partially decomposed condition, and only forms diffuent clots, the part thus involved exhibits a soft pulpy state, and when cut, blood flows somewhat as from a wounded vessel.

The distinction between these cases of pulmonary apoplexy and the ordinary congestion will be readily recognized by the character of the respiration. In the former no respiratory sound whatever will be heard, and there will be a complete dullness upon percussion; while in the latter the respiratory murmur only is entirely wanting, while the bronchial respiration, or blowing sound, will be distinctly heard, and the dullness on percussion is not so perfect, though quite flat.

Causes.—Few cases of hemoptysis ever occur unconnected with hereditary or acquired predisposition to disease of the lungs, either of a general or local character. In other words the causes usually sufficient to produce attacks of hemorrhage from the lungs in systems thus constituted, would have no influence on others free from those tendencies. Hemorrhage from the lungs presupposes a local organization or condition favorable to its occurrence, whatever may be the diathesis of the general system, as otherwise hemorrhage from other organs would be just as likely to occur; while, with an organization greatly favorable to its recurrence, hemorrhage may take place without any general hemorrhagic tendency. With a highly sensitive organization of the substance of the lungs, and a peculiar delicacy of the general structure, any circumstance producing obstruction in the pulmonary circulation would be likely to be followed by hemorrhage. But where the organization referred to exists, and a condition of the blood favorable to hemorrhages is developed, or where a constitutional tendency naturally exists, very trivial causes are often sufficient to produce the difficulty.

In what the organization favorable to hemorrhage from the lungs consists, is not fully understood. But it is believed to be dependent upon a delicacy of structure connected with a peculiar nervous sensibility. The latter renders the organization liable, from slight causes, to interruptions in its functions, resulting in local

determination and consequent obstructions, while the delicate structure is inadequate to resist exsanguineous exhalation or eruption. But the condition of the blood itself frequently has much to do in the occurrence of hemoptysis, and it is only necessary to refer to what I have said on that subject when treating of hemorrhages in general.

The immediate exciting causes of hemorrhage from the lungs are various. Blows or injuries to the chest are frequently observed to produce it. Undue exercise of the lungs in singing, speaking or playing on wind instruments, or severe exertion—such as tusseling, running, or ascending flights of stairs or other heights, are perhaps the most common exciting causes. A greatly diminished density of atmospheric pressure, such as is experienced on high mountains, or in balloon ascensions, will produce hemorrhage from the lungs. I have myself known a number of instances where individuals, having a predisposition to pulmonary disease, were attacked with hemorrhage from the lungs shortly after ascending a mountain. The inhalation of irritating substances, such as gases, comminuted powders, heated or unusually cold air, etc., may be mentioned as frequent causes of hemoptysis. Suppression of habitual evacuations, whether natural or accidental, compression of the chest by tight-lacing, and the sudden transfer of irritation from other parts of the system, as rheumatism and eruptive diseases, are among the exciting causes. Effusion of blood more or less free is almost a universal attendant upon inflammation of the lungs or bronchial mucous membrane, though for the most part the amount of blood thus discharged is inconsiderable, and is mixed with the mucous secretion. In some cases of pneumonia fresh blood is thus thrown up. Hemorrhage from the lungs is a quite common occurrence both in the beginning and frequently during the progress of consumption. When it occurs as the earliest indication of an encroaching pulmonary disease, it will usually, for the time being, afford relief to any symptoms of irritation that may have previously existed, and is therefore calculated to encourage those who are ignorant of the import of such attacks. But for the most part the hopes thus excited are doomed to bitter disappointment, as it is generally the first decisive step in the progress of this fatal scourge.

Hemoptysis may occur independently of any tuberculous affection, from a strong hereditary or other tendency in the organization of the lungs, and from any of those occasional, exciting causes

producing an attack of the kind, and finally result in a low grade of inflammation, terminating at last in what has been termed quick consumption. But it is more frequently the result of obstructed circulation in the lungs, caused by tuberculous depositions, and the hemorrhage, by inviting an influx from every direction, gives a more decided impulse to the local affection previously begun and vigorously sustained by the diathesis of the system, and thus it appears to be, and is often mistaken for, the first indication of serious disorder, when in fact it is only a more apparent manifestation of the true state of the system. In other cases, hemorrhage connected with consumption occurs later in the progress of the disease, and seems often to afford temporary relief to many of the more urgent symptoms, in this way encouraging patients to believe that they are really much improved and will rapidly recover. In this advanced stage of the disease it may result from the ulceration affecting the vessels, and if a vessel of any magnitude is thus disorganized, a rapid and fatal hemorrhage may occur. Yet, it by no means follows, though there is a copious effusion of blood, that any vessel of circulation is actually disorganized, and the same mode of accounting for hemorrhages under other circumstances will equally explain this.

Prognosis.—Though hemoptysis is not of itself, as a general thing, greatly to be dreaded, as shown by the fact that few cases ever immediately terminate fatally, yet, as an indication of a rapid tendency to an incurable condition of the system, it may be looked upon as highly unfavorable when it is unconnected with ordinary pneumonia and is considerably profuse. At the same time, in forming our estimate of the probabilities of the result, we should not overlook the cases we occasionally meet of complete recoveries after profuse discharges of the kind, and especially if the history of the case clearly shows that there is no serofulous taint nor general disease of the blood which might hurry on more grave symptoms. I have had many cases which entirely recovered after profuse hemorrhages, and one where the patient afterward raised a number of children with a prospect of long life.

Hemorrhages from the lungs occurring under circumstances indicative of vicarious action should be regarded more favorably; as the habitual discharge, for which this effusion has occurred as a substitute, may generally be restored by an appropriate course, and the patient finally recover. These vicarious attacks will generally be satisfactorily determined by their regular occurrence at

the usual periods of customary evacuations, such as the menstrual secretion, and habitual hemorrhoidal evacuations.

Hemorrhage from the lungs sometimes takes place with other affections. It is said, for instance, that many persons affected with organic disease of the heart are liable to attacks of hemoptysis. These cases result in part no doubt from the pulmonary obstruction produced by the mechanical pressure of the enlarged organ upon the pulmonary vessels, but mainly from the increased action in the pulmonary circulation necessarily produced by the excessive action of the heart; or, on the other hand, the impediment to the pulmonary circulation caused by the weakened action of the heart, in certain forms of cardiac affections, as in disease of the aortic semilunar valves, may produce engorgement in the lungs favorable to the occurrence of hemorrhage. It may also result from a bursting of aneurismal tumors in the large blood-vessels, and thus by the pressure drown the lungs, or find its way into the bronchial tubes.

Post-mortem investigations have generally failed to discover any positive disorganization of the mucous surfaces of the pulmonary tubes even in cases terminating fatally from loss of blood. But a moderate degree of redness is seen, though not usually sufficient to constitute positive inflammation. It is therefore clearly determined that the discharge takes place by a kind of exhalation. While these are the general facts, other appearances connected with wounds and local injuries would necessarily be found, and there are cases no doubt where the rupture of important vessels has taken place from some of the causes already mentioned. [I can not conceive it possible for true hemorrhage to result from mere exhalation. The corpuscles of the blood can not escape from the capillaries without a rupture of the vessels, or else a solution of the corpuscles. There is no difficulty however, in comprehending the fact, that rupture of the minute capillaries of a congested mucous membrane, may occur without leaving any structural lesion that can readily be discovered after death. S.]

Treatment.—In the treatment of hemoptysis one of the first points to be observed is the cause of the attack. This, however, in most cases does not stand out so conspicuously as in many other affections, in which, when the cause is removed, the disease subsides. This remark applies particularly to the predisposing causes, which are so intimately connected with the whole system as to render immediate reference to them of little moment; for though the exciting cause may be clearly ascertained, it may have done its

work and ceased to be operative in perpetuating the present attack. In this view the knowledge of the cause will often throw very little light upon the course to be pursued. But for the final cure, and also to prevent recurrences, it is highly important to know and avoid the causes.

Our first object, however, is to arrest the flow of blood, whatever may have been its cause. Though it may not be questioned that a discharge of blood from the lungs may afford relief in some cases, and thus be considered salutary in its immediate effect upon the system, yet the influence it is liable to exert upon the local difficulty, as well as upon the blood and indirectly upon the capillary circulation, renders the arrest of the discharge always desirable, and many times indispensable to the life of the patient. And even in cases of vicarious hemorrhage it is far safer to substitute other outlets of morbid matter and thus afford relief, than to risk the effect which the irritation, producing and attendant upon the attack, might have in aggravating and perpetuating affections of these vital organs. Therefore, whatever its cause or connection with other considerations, hemorrhage from the lungs should always be arrested where it is possible to do it. For this purpose, where it is not very profuse, entire quiet or rest, generally in a recumbent posture and upon the back, with the head and shoulders partially elevated, and the internal use of a small portion of common salt, say half a teaspoonful at a time, or half a drachm of spirits of turpentine, will be sufficient. Other measures should be used to equalize the general circulation; sinapisms may be applied to the feet, and if they are inclined to be cold a hot brick or a bottle of hot water may be placed near them. At the same time the room should be properly ventilated, the patient prohibited from talking, and otherwise be kept as quiet as possible, while he should be directed to suppress, if possible, any efforts to cough.

In more severe cases, if the patient is restless and uneasy, in addition to the measures just mentioned, a powder composed of two grains of capsicum and half a grain each of opium and ipecacuanha may be given every two hours, until the patient is relieved, or until the medicine has produced a decided impression on the system. At the same time a strong decoction—say an ounce each to a quart of water—of *trillium pendulum* and *maerotys racemosa*, should be given in ounce doses every hour, and in most forms of hemorrhage, especially pulmonary and uterine, this is the most reliable internal

remedy I have ever used. It should be continued until the disorder is entirely arrested. A strong decoction of *lycopus virginicus* should also be given in ounce doses every hour and a half. If the symptoms show any evidence of considerable congestion in the lungs, a number of large cups should be applied to the side affected, with scarification if the case is urgent.

In cases of still more profuse and rapid hemorrhage, for the purpose of diverting from the lungs and suspending for the time being a large amount of blood from the general circulation, the application of ligatures to the limbs near the body—to one or all of them, as the urgency may demand—will afford relief not offered by any other means, without doing violence to the healthy proportions of the blood, or laying the foundation for other difficulties not easily removed. They should be applied tight enough to mainly interrupt the venous circulation—care being taken not to arrest or impede the arterial action—and may be continued until the hemorrhage is checked and then should be removed gradually. I have witnessed immediate benefit in these rapid cases, followed by final recovery.

In cases connected with fullness of habit and more than usual arterial action, simultaneously with other measures, or such of them as may be thought necessary, a speedy and free hydragogue cathartic should be given. The compound powder of senna and jalap with cream of tartar will answer this purpose, or, if from any cause more desirable, a seidlitz powder may be given every two hours, until a free operation is produced. If associated with a rapid pulse the tincture of *digitalis* and *sanguinaria*, in twenty-five drop doses each, may be given, and repeated every two hours till its frequency is reduced. [The tincture of *veratrum viride* is preferable, according to my experience.—S.] These measures when efficiently applied will rarely fail to afford the desired relief. But as a variety of remedies to fulfill similar indications is often desirable, I will mention others that have been used with advantage. I have already mentioned common salt and spirits of turpentine; they should be repeated, and in many cases will be the only internal remedies needed. Ergot has been recommended for hemoptysis, as well as for uterine hemorrhage, and doubtless possesses many exceedingly valuable curative properties for many cases where there is a greatly relaxed condition of the muscular fibers of the organs involved. It is safest to administer it in decoction.

tion, prepared by using a drachm to a gill of water, and given in tablespoonful doses every half-hour. But it should be remembered that pregnancy would bar its administration.

These are the main remedies which experience justifies me in recommending as reliable and safe for hemorrhage from the lungs, and I may be permitted to add, that thus far they have not disappointed the most sanguine expectations. They should be repeated—all or in part—as the urgency and obstinacy of the attacks seem to justify. It will be observed that I have *not* recommended the two most prominent therapeutic measures recommended by many, and I might say most of the standard authors who have treated on this subject. I refer to general blood-letting and astringents. I have not recommended the former because I believe it is entirely unscientific and often unsafe, and because I do not believe it curative or truly remedial. I shall not dwell upon the subject at this time, as what I have said when discussing the subject of inflammation and the effects of blood-letting in the treatment of inflammatory diseases, applies with equal force to the treatment of hemorrhage. I will only quote a short passage from Magendie, who in a lecture to his class says: “Here is the blood of an individual who had an attack of hemoptysis, and was bled freely for it. You know well what I think of *that remedy*—worse, perhaps, than the disease. Be that as it will, you may perceive that this blood is very slightly viscous; I in consequence presume that further mischief will occur. We shall see if my presumptions are realized.” The case was subsequently presented, and singularly verified the learned lecturer’s prediction. Magendie was then illustrating, by experiments, that a certain amount of viscosusness was necessary to the free and healthy circulation of the blood in the capillary tubes, and without it that the blood became obstructed in those vessels, and, under circumstances otherwise favorable, hemorrhage would occur. This viscosusness he demonstrated bleeding diminished, and thereby conduced in a remarkable degree to the production of hemorrhage.

I have not recommended astringents as such for two reasons. First, they have failed in my experience to answer the expectations which their sensible properties seemingly justified, and have not had any thing like as good an effect, when administered in this and kindred affections, as other remedies which I have used and recommended. And secondly, the experiments made by Magendie upon the blood with many remedies of this class, both

when injected into the blood of the living animal, and also when mixed with blood out of its circulating vessels, have shown most conclusively that its effect is to prevent the formation of a coagulum, a circumstance well known in all cases to be most favorable to hemorrhages of every description, the blood without coagulability having no security in the tubes in which it naturally circulates. Thus, what experience and observation have most satisfactorily shown to be correct, direct experiment upon the blood, with analogy and just implication, most clearly confirms. It is not therefore to the class of remedies possessing merely astringent properties, or having the effect solely of constringing the animal tissues, that we are to look for our most reliable agents in the treatment of this class of diseases. We must rather expect to find satisfactory therapeutic agents in those articles which have a more specific vital influence on certain morbid actions or conditions of the animal organism. In the present state of our knowledge it may be difficult to give satisfactory explanations of the operation of medicines, which repeated observation has yet clearly shown do produce beneficial effects in these and other disorders. I might ask in what way ergot, or turpentine, or any other remedy that has been recommended for these cases, affords relief in hemoptysis? They most surely possess no sensible astringent properties, and therefore it can not be said that their action depends upon any constringing effect which they produce in common with astringents proper.

I have already said generally that the patient should be kept quiet, and I will now add that the most perfect quiet, not only of the body, but of the mind, so far as possible, should be enjoined. Encouragement to the full extent of the probabilities for recovery should be given, and the friends should be most earnestly enjoined against manifesting a gloomy anxiety, which is always too plainly recognized by the sick, is often construed into hopeless forebodings, and can scarcely fail to have its influence upon the system.

The diet in all such cases should be very harmless and simple, and even entire abstinence from food, for a day or two during the active stage of the disease, would by no means be injurious. When convalescing the patient should return gradually to his ordinary diet, and as he improves very moderate exercise in the open air, if the weather is not too cold, may be allowed.

Periodical and vicarious hemorrhages from the lungs require no particular, distinctive treatment to arrest an attack; but after the

bleeding is relieved, efficient measures should be immediately instituted to restore the evacuations for which the hemoptysis is substituted, or to change the condition of the system upon which the primary difficulty depends. If it be the menstrual evacuation that is in fault, the various measures that have been and will hereafter be directed for that disorder, or such of them as the peculiar character of the case may indicate, should be immediately put in requisition. Or if habitual hemorrhoidal bleeding has been transferred to the lungs, measures should be directly resorted to, either to restore that discharge, such as physic, fomentations, and other local measures, or to change the condition of the general system upon which the hemorrhoidal affection depends. So, in short, of other states of the system from which affections have been transferred to the lungs and produced hemoptysis, the appropriate measures for their complete eradication, or local and general measures to divert the transferred irritation, should be resorted to.

In order to prevent recurrences of hemorrhage from the lungs all the general causes—among which the organization of the lungs and the condition of the general system hold the most conspicuous position—should be as far obviated and changed as the knowledge we possess of the best means will enable us to do so; while at the same time the influences known to be favorable to occurrences of the kind, and especially such as are found to be instrumental in producing the present attack, should be particularly guarded against. Singing and speaking are liable to induce hemoptysis, and therefore should always be proscribed, particularly when they have already produced an attack. Exposures of every kind should be carefully abstained from, moderate exercise in the open air should be taken to the extent of the patient's ability; uniformity of temperature in the system should be secured by appropriate clothing; and the surface should be frequently bathed to promote an equilibrium in the capillary circulation. The digestive organs should be attended to and always kept in a healthy condition, either by using aperients, tonics and alteratives, if necessary, or by abstinence from medicine, as the case may seem to demand.

[As confirmatory of the general correctness of Prof. Jones' teachings on this subject, I subjoin the following abstract of M. Aran's paper on hemoptysis from the *Medical Times and Gazette*, January, 1856:

“M. Aran agrees with those who entirely condemn the employment of blood-letting in the treatment of hemoptysis, as it only

temporarily arrests the bleeding, while it is dangerous, owing to the debility, and increased susceptibility to the intercurrent affections it gives rise to. He has, for some time past, been engaged in testing the efficacy of the various hemostatic agents employed in hemoptysis; and in this paper he gives the results of his observations. He considers the essence of turpentine a most valuable remedy, given in doses of from ten to thirty drops every hour, either in a spoonful of water, or mixed up with magnesia as a bolus. Marked amendment usually occurs in a few hours, and in from twenty-four to thirty-six hours the bleeding ceases. It is less suitable for young or plethoric subjects with febrile action, than in weak cachectic individuals, exhibiting atonic characteristics. Ergot of rye and ergotine are far less efficacious; but chloride of sodium, given in doses of one to two and a-half drachms, proves very efficacious in some cases, and has the advantage of being always at hand. Among the astringents, tannin, and especially gallic-acid, are to be recommended; the latter, while quite as efficacious, does not exert the same desiccating effect upon the tissues, or induce the obstinate constipation produced by tannin. As a mean dose, M. Aran gives fifteen centigrammes (a centigramme is one-seventh of a grain), every hour or alternate hour. He has had little experience in the use of emetic and nauseating remedies; but in three cases in which veratrine was employed, the bleeding ceased as if by enchantment. This class of remedies, indeed, would deserve to stand in the first class of hemostatic agents, were there not others possessing like efficacy, and yet not giving rise to the painful nausea these produce. M. Aran has derived great advantage from the combined use of digitalis and nitre. In ordinary cases, he gives in the twenty-four hours, thirty centigrammes of digitalis, and one and a-half gramme (a gramme is fifteen grains) of nitre, divided into four doses; but in very severe cases these doses may be very much increased, so that the digitalis has been given to the extent of one and a-half gramme, and the nitre to four grammes, without injuriously affecting the action of the heart, while the effect produced on the hemorrhage has been remarkable. Its arrest never, however, takes place so suddenly under the use of these medicines, as when turpentine or gallic-acid is employed.

“In abundant, but not immediately dangerous hemorrhage we can choose among any of the above-mentioned means. In extremely abundant hemorrhage, we must arrest the flow as speedily as possible, by agents which do not depress the powers of the economy

too much, and which are not too slow in their operation. Neither ergot, acetate of lead, nor alum is sufficient to meet the danger. Turpentine, gallic-acid, chloride of sodium, or nitre with digitalis, can alone be trusted; but the necessity of increasing the dose with the intensity of the hemorrhage may, perhaps, render the chloride of sodium, and especially the nitre and digitalis, dangerous, through the possibility of the production of a too great depression of the heart's action. It is therefore, to gallic-acid or turpentine that we must chiefly trust in these severe cases; and we must not limit ourselves to their employment, but also endeavor to procure a temporary arrest of the hemorrhage by ligatures to the limbs and the application of ice to the chest, allowing the means employed internally to consolidate this temporary cure." S.]

LECTURE LXXI.

LOCAL DISEASES—CONTINUED.

Menorrhagia: Definition; Active and Passive Forms; Symptoms of Active Menorrhagia; Symptoms of Passive Form; Causes; Treatment. Intestinal Hemorrhage: Rarely occurs Idiopathically; May Originate in Stomach; May attend Fevers; Amount of Evacuations Various; Anatomical Developments; Diagnosis; Causes; Treatment. Hematuria: Symptoms; Diagnosis; Causes; Pathology; Treatment.

MENORRHAGIA, OR UTERINE HEMORRHAGE.

In treating of this affection, I shall not confine myself to the view implied by the literal meaning of the term, nor follow precisely the course adopted by most popular authors, who have written on this subject; but shall comprehend not only those forms of uterine hemorrhage which occur at or about the time of the regular menstrual discharge, but also those cases which are produced and kept up by local organic disease usually found about the neck of the womb. I consider this course justified by the fact that I have met with numerous cases entirely unconnected with surgical practice, and in no wise associated with obstetrical experience. I shall not, however, comprehend in this lecture those uterine hemorrhages often occurring in connection with pregnancy, or following child-birth.

With the explanation of hemorrhage now generally adopted, and with the present understanding of the menstrual evacuation, the regular uterine discharge, which, as a general rule, occurs once a month or twelve times a year, from about the age of fifteen to forty-five, can not with propriety be considered as uterine hemorrhage. Yet most of the cases met with by the practitioner present few, if any, evidences sufficient to distinguish them from the natural evacuation, except their greater frequency of recurrence and somewhat more profuse discharge. In a practical point of view, therefore, these irregular periodical evacuations, and others having the character of a hemorrhage, must be considered the same, since the two morbid processes do not differ in

their influence upon the health of the individual, and require similar measures for restoration. No precise distinction between the unnatural morbid process and the natural one, can ordinarily be arrived at, without a more critical investigation than can usually be made. Nor can any particular limit of the amount evacuated be adopted as the standard of a natural flow. For, although an evacuation varying from two to six ounces of an uncoagulable fluid, recurring twelve or thirteen times a year, may be considered an ordinary healthy discharge, yet we know there are many instances where the discharges vary both in amount, from one-half to three times as much, and in frequency, from three to six weeks, without developing any symptoms of disease, and without any interruption to good health. The only distinction, therefore, that can be made in these cases, with any practical benefit, will depend upon the effect produced upon the health of the individual.

Hemorrhage from the uterus is divided by authors into the two forms of *active* and *passive*. Usually in the *active form*, for a few days before the appearance of the expected menstruation, a sense of fullness and a throbbing sensation will be experienced about the pelvis, sometimes accompanied by a sense of internal heat, while the external organs will be somewhat enlarged. In some cases there is soreness or tenderness in the mammary glands; the bowels become costive, the tongue furred, the pulse exhibits a slight increase in frequency, while there is slight heat of skin, with some thirst and headache. These symptoms continue for a few days, when they are partially relieved by the appearance of the monthly evacuation, which comes on violently and is greatly increased in amount. Thus it may continue for a number of days,—being increased upon the slightest exertion,—and then gradually decline until it disappears. Or it may continue only for a few hours and then mainly cease, but, upon the least exertion, and in most cases without any exertion, return again with equal and sometimes greater severity. And thus it may go on, either constantly or irregularly profuse, until the patient becomes weak and exhausted, scarcely recovering the ordinary health before the period arrives for another flow. Sometimes it continues for months, and even for years, gradually undermining the vigor of the system, and bringing on the appearance of premature old age. The only difference between a case of this kind and that of health, in a practical point of view, consists in the

severity of the symptoms accompanying the excessive evacuation. Other cases occur, however, presenting considerable irregularity in the occurrence of the evacuation, as well as severity of symptoms during the attack, coming on every two or three weeks, and sometimes oftener, so that only a short time intervenes for repair between the prostrating discharges.

The suffering during these paroxysms differs greatly in different cases; in some, as already stated, it is very severe, while in others the greatest inconvenience is the debilitated feeling resulting from loss of blood. The cases referred to, in which a certain period of freedom from the debilitating discharge occurs, will generally be found free from any organic disease of the uterine organs, though considerable vascular engorgement both of the uterus, so far as can be observed, and of the vaginal mucous membrane, may exist during the interim between the evacuations, sufficient to keep up, in many cases, a pretty free discharge from that membrane, of a muco-purulent and often of an irritating character, but differing greatly in this respect. Cases, however, are frequently met with in which a constant flow of blood is kept up from one period to the other, though generally more copious during the regular period for the occurrence. So far as I have had an opportunity to observe these cases are connected with some organic disease of the uterine organs, mostly of an unmalignant character, and located about the mouth or neck of the uterus. I have met with a number of instances of this kind, and, upon careful vaginal examination, ulcers more or less extensive have been found in the mouth of the womb, from which the sanguineous exhalation was constantly taking place, mingled with the natural evacuations at the regular periods, but continuing after that discharge ceased. These ulcers have been found to vary in different cases; in some a row of small ulcers was observed occupying the greater portion of the mouth of the uterus; in others they were less in number, but larger and more irritable; while in two or three cases ulcers of the size of a walnut projected beyond the neck of the uterus, presenting an irregular and fungous appearance.

In most of these cases, whether recurring at the regular periods or at shorter and irregular intervals, and more especially where a constant drain upon the vital fluid is kept up, sooner or later the system begins to manifest the loss it is sustaining by general appearances of exhaustion and decline. A very sallow complexion, with pale lips, and a general anæmic appearance of the capillary

circulation; an irritable and feeble pulse; a hurried and exhausted respiration upon any exertion; frequently a bloated and edematous state of the extremities, and often serous effusions into the cavities; irritability of the bowels, and a weakened state of the digestive organs, are attendant upon the case, and indicate a doubtful issue unless speedily arrested.

Uterine hemorrhages of the character I am considering, rarely of themselves prove fatal, and even in any ordinary complication can readily be relieved when timely and appropriately managed. But in what has been termed the *passive* form, a more exhausted and deranged condition of the general system, and particularly a deteriorated state of the blood, will be observed from the beginning of the case. Thus when scurvy, purpura, or other forms of disease in which a vitiated condition of the blood is a prominent symptom, producing a corresponding derangement in the more solid tissues of the body, are found to exist, the system will be in a condition favorable to the production of passive hemorrhage upon very slight causes. In this condition, any obstruction occurring in the uterine capillaries would be likely to result in a sanguineous percolation through the relaxed tissues of those vessels. Or the same result may take place, in systems thus predisposed, from the force and energy imparted to the circulation by the greatly increased arterial action, consequent upon the natural engorgement of the uterine vessels at the regular menstrual period, thus forcing upon that depurating function an unusual labor.

Pregnancy rarely takes place in any case of menorrhagia, whether the excessive evacuation be a mere excess in the natural discharge, or whether it presents the true character of hemorrhage, but especially if the discharge is connected with organic disease of any part of the uterus. These excessive discharges are liable to occur at any period during the existence of the natural effusion, and, in fact may occur long after its cessation; but they are most frequently met with a few years previous to, and at about the time when the natural evacuation inclines to stop.

It will be observed that, though I have not definitely distinguished between excessive menstruation, or menorrhagia proper—which is supposed to be nothing more than an increased flow at the regular menstrual period—and the discharge of blood from the uterus which often occurs in connection with the sanguineous effusion, yet I have shown that they may, and no doubt often do occur at the same time, and that, even if we were able to discrim-

inate between them—which is always difficult and often impossible—but little practical good would result.

Causes.—The most common causes of uterine hemorrhage are sedentary habits, a costive state of the bowels, and the frequent abortions which result in part from the causes just mentioned. Other influences causing undue determination to the uterus may produce it. Thus great fatigue from standing or walking just before, or in the early part of the menstrual period, excessive sexual indulgences shortly before the same period, hemorrhoidal affections, severe aloetic and other purgatives, and cantharides and other irritating medicines, may produce a local determination to the pelvic viscera, and thereby favor the occurrence of excessive flow or actual uterine hemorrhage. Costiveness and tight-lacing may be said to produce similar effects by mechanical obstruction to the ascending circulation. Among the immediately exciting causes, I have observed that long continued standing in the labor of ironing, especially when the system becomes overheated is the most common.

Treatment.—In no form of hemorrhage is entire and absolute quiet so necessary as in this. Whether it be for the purpose of preventing abortion or miscarriages, or of allowing the percolating fluid to be dammed up by coagula, in the hemorrhagic form of the affection, or of preventing any undue obstruction to the returning current of the general circulation and thus guarding the uterine vessels from engorgement, rest in the recumbent posture is always to be directed for attacks of flooding or excessive menstrual discharges. In addition to this, a large sinapism should be applied to the spine between the hips, and allowed to remain until effectual counter-irritation is produced. Meantime, if the hemorrhage is associated with pain, and a sense of weight and bearing down, a powder of acetate of morphia and capsicum, in doses of one-eighth of a grain of the former and two grains of the latter, should be given every hour and a half, until the pain and pressure are relieved. Whether this prescription can be said to have any specific effect upon the uterine vessels, by restraining the exhalation of blood, or whether it exerts a diffusible antispasmodic influence upon the local spasm and the general circulation, its beneficial effects in this form of hemorrhage, in the condition I have alluded to, will rarely fail to be made apparent, not only in relieving the pain and quieting the nervous system, but also in checking the rapid flowing which often attends such cases, and especially

in producing a warmth in the extremities, and a healthy glow over the whole system, that did not previously exist.

The measures just mentioned are more particularly calculated to affect the general circulation. At the same time that they are administered, others, believed to have a more direct influence upon the uterine circulation, should be resorted to. Having in my practice traveled through the main list of astringents reputed to exercise control over these morbid conditions of the system, without obtaining the beneficial influences upon the discharges which I expected, which, it seemed to me, would be necessary consequences if their action was efficient, I was early led to doubt their curative effects, and to look to other measures for relief. My doubts in regard to their influence upon the diseases in question, Magendie has demonstrated to be entirely correct, by direct experiment upon the blood, both when in the circulation, and when drawn from the system. I may state, by way of example, that after fairly testing the acetate of lead, which ranks high in this class of remedies, I am not able to call to mind any such effects upon these discharges as would sustain the confidence which others repose in it, or justify its comparison with other measures that can not be supposed to operate by virtue of any astringency which they possess.

Among the internal remedies that I have used, in addition to those already mentioned, and which have rarely failed to manifest a very sensible and almost immediate influence in restraining and gradually checking the excessive discharges from the uterus, is a decoction of the following articles: Dose, a tablespoonful every half hour.

R. *Macrotys* rac.,
 Trillium pend.,
 Fol. rubus strigosa, āā ʒss.
 Sanguinaria can., ʒij.

Pulverize, mix, make a decoction in a quart of water, and sweeten.

When we see rapid and profuse discharges in many cases very shortly restrained, and within a reasonable time entirely checked, it is difficult to withhold our confidence. It may be difficult to explain in a very satisfactory manner the *modus operandi* of this prescription. But, in the present state of our knowledge, even if we have not reason to be satisfied with the explanation of the operation of any medicine, it may with great propriety be doubted

whether we should have any the less confidence in it when we witness its beneficial influence in the cure of disease. A medicine may be found curative beyond a doubt, and our general views of its properties may be made apparently to harmonize with its action for the time being; while subsequent observations may prove that properties were ascribed to it which, in fact, it did not possess. Yet our confidence in it should not be abated, if it has really produced beneficial effects. In regard to the above prescription, the therapeutic action of sanguinaria upon the circulation, in quieting excessive, or diminishing natural arterial action, is well known and clearly understood; and the effect of the macrotys, in exciting the uterine fibres to tonic contraction, is equally well ascertained, and its operation sufficiently intelligible. But as for the trillium we are compelled, at present, to place it in the category of empirical agents, though certainly a valuable remedy in hemorrhagic affections. In cases of uterine hemorrhage, connected with great relaxation of the uterine fibres, ergot can be recommended with considerable confidence, as offering advantages superior to most other remedies; it may be given in decoction.

When the bowels are found loaded, and especially if the patient is plethoric, a free operation from a cathartic should be procured, unless contra-indicated by appearances of general debility. But cases sometimes occur in which, either from delay in sending for a physician, or from the inherent tendency in some persons to rapid evacuation, the danger to the patient, on account of the amount of blood already lost, or the rapidity with which it is flowing away, is too great to await the tardy operation of any medicine, however speedily it may act through the general system, before applying effectual means to check any further discharge. This can readily be accomplished by firmly plugging up the vaginal outlet with a sponge, if at hand, and if not, with a wad of folded linen dipped in cold water. The subsequent discharges being thus retained, a clot will be likely to form, and in this way close up the orifices through which the exudation occurs. This should not be allowed to remain more than twenty-four hours as it will become offensive, and is liable, in that case, to produce nausea and vomiting, and thus start the discharge afresh. But if carefully removed in time there will be little danger of producing a return of the discharge. If, however, it should return from any cause, no time should be lost in reapplying the *tampon*. Magendie mentions that he injected the ioduret of iron into the vagina, with the immediate

effect of arresting the discharge. He says: "I had a patient affected with a severe uterine hemorrhage; my *interne* had vainly tried all the remedies habitually used in such cases, when we thought of employing the *ioduret of iron*. You remember that that salt promotes the coagulation of the blood removed from the body. A drachm of it was accordingly dissolved in two pounds of water; the patient employed it as an injection into the vagina several times in the course of the day, and on the morrow the hemorrhage had totally ceased."

When a profuse evacuation is associated with general debility and relaxation of the system, which often happens, it becomes necessary, in addition to some of the measures already recommended, to pursue a more restorative and tonic course. Under such circumstances a nutritious diet and mild tonics should be prescribed. Beef tea, or rare done beef, oysters or birds, and stale bread, rice or roasted potatoes, with wine whey or a small portion of Scotch ale, carefully used at first, should be allowed. In all these cases the intervening period between the attacks should be occupied in giving tone to the general system by a judicious course of exercise, careful attention to the condition of the digestive organs, and such other measures as may be necessary to guard against a return of the evacuation in an excessive degree. Especially should patients be warned to avoid those influences that have been instrumental in producing the difficulty.

Those cases which are evidently dependent upon organic and non-malignant disease of the uterus, evinced by the more or less constant evacuation either of blood, or of a muco-purulent matter, should be carefully examined, and such applications made as the extent and character of the local difficulty may require. The only reliable method of determining the true state of the case is by making a careful examination of the vagina and uterus with a speculum. If the local difficulty is found to consist in small aphthous ulcers about the mouth of the uterus, or any where else, they can generally be readily healed by a few slight touches with the nitrate of silver every three or four days, injecting, meantime, a decoction of hydrastis every day. If the disease appears to be located higher up in the cavity of the womb, a solution of one drachm of the preparation designated in the American Eclectic Dispensatory as the sesqui-carbonate of potassa, in two fluid-ounces of water, may be injected into the cavity by means of a small syringe, fitted to the end of a straightened silver male catheter, which should be passed through the speculum

into the mouth of the uterus. I have also used for a similar purpose diluted tincture of iodine.

But if a fungous excrescence is found to exist, a more efficient application than either of the foregoing will be necessary. In such case I have always succeeded in a short time by applying caustic potash through the speculum immediately to the fungous growth. Great care should be used, however, to confine it entirely to the fungus, as otherwise you are liable to produce an eschar in the vaginal lining. The patient should be placed in a bright light, so that the neck of the uterus shall be brought into the focus of the speculum, and then the end of the catheter, moistened with a small portion of the caustic, should be applied directly to the ulcer. The application, when thus made, should be repeated only once a week, giving time for the eschar of the first to come away before another is made, until the fungus is destroyed; when it should be allowed to heal, and may be assisted in so doing, if the process is tardy, by one or two slight touches with the nitrate of silver. I have uniformly found the flowing to cease upon the first application, and afterward return at the regular period in appropriate quantities. This course, with moderate tonics and other general restorative measures, will generally be sufficient.

I have, gentlemen, thus endeavored to instruct you in all that practically pertains to uterine hemorrhages as they are likely to present themselves in the ordinary experience of the practitioner, leaving out of view those cases connected with surgical and obstetrical practice, as more properly pertaining to those departments of medical science.

INTESTINAL HEMORRHAGE, HEMORRHAGE OF THE BOWELS, OR MELÆNA.

Independent of discharges of blood from the hemorrhoidal vessels, and of those bloody evacuations attendant upon low and malignant forms of fever, hemorrhage from the bowels is a very rare affection. Occasionally, however, it occurs in connection with chronic enteritis, and may here and there be met with independent of any well-defined disease. But as an attendant upon certain forms of protracted and low grades of fevers and dysenteries, and also upon scurvy, purpura, and other affections resulting from an essentially altered and vitiated state of the blood, hemorrhage from the bowels may be considered of frequent occurrence.

A discharge of blood from the bowels may often take place when its origin is in the stomach, or possibly in the throat or nose; and

it is not impossible that the blood may be forced, by an inverted peristaltic action, from the intestines into the stomach, and be thence ejected by *vomiting*. It may, therefore, appear difficult to determine its source both in hemorrhage from the bowels and hematemesis; but the attendant symptoms, where they have reference to one part more than another, the history of the case, and the previous tendency of the patient to disease, will rarely fail to afford predominating evidences altogether sufficient to distinguish the nature of the difficulty.

When hemorrhage from the bowels is attendant upon fevers and dysenteries, no symptoms will precede the discharge particularly indicative of that event, except the exhaustion and debility that accompany the accumulation. But in those forms of fever in which disease of the bowels is not only a prominent symptom, but frequently constitutes the essential character of the malady, we always find well-marked indications of enteric disorder previous to the occurrence of hemorrhage, though nothing would particularly prognosticate that difficulty, and though in fact it rarely occurs in this connection. Nor are the feelings of uneasiness and oppression, the sense of fullness or tenderness upon pressure in the bowels, the pains extending into the sides, the well-marked symptoms of indigestion, loss of appetite, furred tongue, and irregularity of the bowels mostly in the form of diarrhea, accompanied by a pale or sallow complexion, the sense of weakness and exhaustion, usually attendant upon chronic affections of the bowels, any more reliable, though they generally precede an attack of the kind. These symptoms however may exist for a long time in chronic enteric affections and finally disappear; or they may be followed by a sensible increase of the local uneasiness, with griping pains, an increased frequency of the pulse, a sense of exhaustion, coldness of the extremities, slight nausea with faintness and dyspnoea, followed by a copious discharge of blood. The blood upon examination may present a dark, grumous, and partially clotted appearance, or it may be nearly black with diffuent clots partially mixed with fecal matter. Or the hemorrhage may appear without any prominent symptoms of previous disease, and not be suspected until its appearance and the attendant exhaustion define the case. The sudden occurrence of symptoms of debility, faintness, and exhaustion, with existing evidences of protracted hepatic disorder, accompanied by a sallow, bloated, and greatly debilitated condition of the system, would justify us in anticipating the discharge.

The amount of these evacuations varies in different cases: in some being insufficient to produce any sensible impression upon the strength of the patient, while in others the quantity is so great as to bring on an alarming prostration, and occasionally a fatal exhaustion. Generally however the system rallies from the depression consequent upon the loss of blood, reaction occurs, and the patient is finally restored. After a short time, and while the patient is apparently doing well, another discharge may come on, and prostrate the system lower than before. It may in the less severe cases recur a number of times, and thus gradually weaken the powers of life, until the anæmic condition of the blood and a dropsical effusion into the cavities follow and thus destroy the vital processes.

Though a knowledge of the actual source of the blood in hemorrhage from the bowels may be of little practical value to the physician, yet it is surely of some interest to be able to satisfy the mind on every point connected with disease. Although this point can not be determined with certainty, yet the character of the evacuation, and a careful exploration of the abdomen to detect any soreness or other local peculiarity, will enable you to form a reasonable opinion in regard to its origin. Thus if the blood evacuated exhibits a florid or bright red appearance, unmingled with the intestinal contents, it is reasonable to suppose the origin is in the large intestines; if dark red, unmixed with other substances, and accompanied by a sudden exhaustion, it would be fair to suppose that the blood had rapidly accumulated, and had its origin in the lower part of the small intestines. But on the contrary, when it is very dark, and partially mixed with egesta, the supposition would be that it had accumulated but slowly, and thus become mingled with the contents of the bowels. As in low grades of endemic and epidemic fevers, the blood exhibits a dark and diffuent, or semi-liquid and tar-like appearance, we may reasonably conclude that some important change in the quality of the blood is the essential difficulty in the case. In dysentery it differs from all other forms of intestinal hemorrhage by the mixture of blood and mucus, and the attendant tenesmus and griping pain.

Anatomical developments.—Intestinal hemorrhage, like all other forms of the disease, presents great differences in the anatomical developments connected with it. Thus, in most instances, when the hemorrhage occurs in the course of fevers and dysenteries, the

blood no doubt percolates through the relaxed tissues involved in the ulcerated patches existing in the bowels. In such cases we may not be able to detect any opened vessels, and the only peculiar appearance which will be discovered, apart from the local effects of the associated fever, is the accumulation of blood in the bowels, of the same character with that discharged. The same may be said of those cases occurring in connection with chronic diseases of the bowels. But in other cases the mucous membrane will exhibit no evidences of disorganization, and will present no other abnormal appearances than a congested state of portions of its circulating vessels, and perhaps some traces of the coloring matter of the blood; or possibly the main constituents of the blood itself will stain the mucous surface, resulting, probably, from the imperfect effort at absorption; thus showing that the rupture of a vessel, either from existing ulceration, or from accidental causes, does not explain the sudden appearance of blood from the bowels, as is clearly shown by post-mortem investigation.

Diagnosis.—I have already sufficiently discussed the distinctive characteristics of the affections which are in any way liable to be mistaken for hemorrhage from the bowels, and I refer you to those subjects if any further explanation is required for a full understanding of this branch of the subject. I may add, however, that in some rare instances there is a thick, tawny, inspissated secretion, probably proceeding partly from the liver, and partly from the bowels, which, in some respects, resembles the discharges of blood from greatly vitiated and broken-down systems, in which the blood exhibits but little of its true vital character. If, in such cases, there is obscurity and doubt about its character, the addition of a little salt will change it to a more florid color if it is blood; whereas, if it is a mere morbid secretion, the addition of the salt will produce no such alteration. The blood discharged from hemorrhoidal tumors resembles so closely that which escapes from the bowels further up, as to render the local symptoms the main criterion to rely upon in this case.

Causes.—The fact that hemorrhage from the bowels is almost inseparable from other diseases, and that it is merely a symptom in the progress of those affections, renders an enumeration of the causes, which may be instrumental in producing it, both difficult and unnecessary. I may say, however, in general terms, that whatever tends to produce obstruction, and consequent engorgement in the capillary circulation of the mucous membrane of the bowels, may,

and does contribute to the production of intestinal hemorrhage; though it by no means follows that causes of this description will always, or generally, be followed by discharges of blood. Thus though hemorrhage from the bowels frequently occurs in certain fevers and chronic affections of the bowels, and though a similar condition of the parts may be supposed to exist in all these cases, yet but a small portion of them thus diseased are ever troubled with hemorrhage. The diseases with which intestinal hemorrhage are most frequently associated, or that may be said to be productive of it, are typhoid and congestive fevers, malarial dysenteries, chronic diseases of the bowels, purpura and scurvy,—in all which it is a very common symptom. It is also an occasional symptom in the progress of chronic diseases of the liver and spleen.

Treatment.—The association of intestinal hemorrhage with other diseases renders it difficult to designate a straightforward and definite course of treatment, as the same condition of the system in other respects is rarely observed in these affections. But if it occurs in connection with fevers of a low grade, few remedies will exert a more prompt influence than a decoction of peach and raspberry leaves, and fifteen or twenty drops of spirits of turpentine, repeated every two hours. If accompanied with considerable soreness, and tenderness on pressure at any particular point of the abdomen, it will be useful to scarify the part and apply a large tumbler for a cup. These should be followed by a large soft cataplasm of bread and milk mixed with hops, applied as warm as it can be borne, and changed once in two or three hours. If the bowels meantime are inclined to be too loose, and from the attendant symptoms you have reason to conclude that ulceration exists, a pill of one-tenth of a grain of nitrate of silver, and one-eighth of a grain of acetate of morphine, mixed with gum arabic, may be given once in three or four hours for one day. When the difficulty is connected with disease of the bowels and great relaxation of the mucous membrane, after the more active symptoms have been relieved by the measures already stated, wineglassful doses of an infusion of the compound powder of rhubarb, with wild-cherry bark, may be given three times a day; at the same time, a large irritating plaster should be applied to the abdomen, and worn till an extensive discharge is established from the pustulating sore produced by it.

Most cases will be accompanied by a frequent tendency to evacuation of the bowels, which should be kept moderately in check

by the daily use of some astringent and anodyne preparation, such as the tincture of catechu and paregoric, mixed in equal parts, given in two-drachm doses, and repeated as often as may be necessary; or it may be sufficient to administer an injection of laudanum. Or if there is a mere relaxation, without much diarrhea—but a looseness bordering on it—a decoction of the blackberry root well sweetened, with an addition of a small portion of brandy, unless the case is accompanied by arterial excitement, may be taken in wineglassful doses three or four times a day.

Those cases dependent upon unequivocal derangement of the blood, such as occurs in scurvy, purpura and low fevers, should be put upon a course of medicine and diet best calculated to restore a healthy condition to the fluid. A general course of tonics, alteratives, and nutritious diet, comprehends the outlines for such cases; the details have already been given when considering those several affections.

When you have reason to suppose that an impacted or loaded condition of the colon has been instrumental in producing the hemorrhage, a brisk cathartic should be administered in the beginning. The compound powder of senna and jalap with cream of tartar is perhaps as prompt and efficient as any that can be given, and also sufficiently mild; or a dose of turpentine and castor-oil may be given; or if a less active medicine will answer, a seidlitz powder may be used, and repeated every two hours until it operates. If the case is in any way connected with irregularity in the menstrual evacuation, while the measures already mentioned, or such of them as may be indicated, should be used to palliate the urgent symptoms, the most effectual means to regulate that discharge should be resorted to, at as early a period as may be compatible with the peculiarities of the case. When the hemorrhage is connected with congestion of the liver and spleen, besides the ordinary palliatives necessary to check the discharge for the time being, or relieve the system from any temporary danger, the remedies heretofore prescribed for such affections should be given. In this, as in all other hemorrhages, entire quiet both of body and mind is among the most important points to be observed. The diet in all cases should be light but nutritious, and such as may not be objectionable on account of febrile symptoms that may exist in the case; nor should it be so light and simple as not to afford the amount of nutriment required for the support and repair of the system.

HEMATUREA, OR HEMORRHAGE FROM THE BLADDER.

This term is used to indicate an evacuation of blood from the urinary passage, without reference to the organs in which it originates, whether it proceeds from the bladder, or kidneys, or from the passages leading from those parts. Bloody urine is less common than some forms of hemorrhage, and more frequent than others.

Symptoms. — An extensive hemorrhage of this kind is generally preceded by some uneasiness, and perhaps pain; though I have myself met with cases accompanied by no uneasiness, except during and shortly after the discharge of urine. Most cases, however, are preceded by some pain or uneasiness in the part from which the blood emanates, indicating local irritation. When the discharge proceeds from the urethra it generally comes away clear, or unmixed with urine; but when it proceeds from the bladder, though it is evacuated with the urinary secretion, or at the same time, still it will be somewhat separate, or at least not as intimately commingled as when it has its origin from the kidneys, where the exhalation occurs simultaneously with the secretion. The origin of the blood, then, may be determined with some certainty by the local symptoms accompanying or preceding an attack of the kind, and by the appearance of the urine and blood discharged. Thus if it proceeds from the kidneys, the blood and urinary secretion will be so intimately mixed as to present one simple fluid having the appearance of bloody water, and some pain and uneasiness will be felt in the region of the kidneys, with some tenderness upon pressure at those points. While if it proceeds from the ureters, though the blood might, in some cases, be quite intimately mingled with the urine, in others it would present the appearance of long and cylindrical clots, formed into the ureters and thence passed into the bladder; while the pain would be referable to the region of the ureters, and would be such as is experienced in the passage of small urinary calculi formed in the kidney and finding their way into the bladder. Where its origin is from the bladder, the pain experienced either before, during, or after the evacuation, will be felt in the region of the bladder immediately above the pubis, or in the perineum and extending into the glans penis; and the blood will present a comparatively separate and distinct appearance of coagula floating in the urine. In some cases the clot forms in the

bladder, so as partially or entirely to prevent the discharge of urine. When it proceeds from the urethra, it comes away unmingled with urine, as it is exuded, drop by drop, or in a stream. In the latter case, the urine when discharged will not present the bloody appearance common to the other cases, except that the first portion evacuated will be slightly colored as it washes off the exuded blood in passing through the urethra.

The quantity of blood discharged in this form of hemorrhage is found, as in other instances, to vary greatly in different cases. In some, it is barely sufficient to color the urine or stain a cloth; while in others it flows in quantities sufficient to greatly exhaust the system and endanger the life of the patient. In some cases it comes away presenting a bright and florid color, and in others a dark, brownish red appearance. Sometimes it flows away readily without pain or much uneasiness; then again it is discharged with difficulty, producing, both before and afterward, severe suffering and distress, accompanied with frequent inclination to urinate, a bearing down sensation and pain in the neck of the bladder, and a feeling of heaviness and fullness in the pubic region.

Hematuria is, generally, neither very painful nor dangerous, though its course and persistence depend greatly upon its connection with other diseases, and the condition of the general system. In some rare instances it becomes of itself an alarming disorder, producing extreme prostration. It may also be regarded as dangerous when connected with a highly vitiated condition of the blood, and great debility of the whole system. It may likewise become a source of alarm, even though it has no connection with other affections, nor with any abnormal condition of the blood, but simply by the mechanical obstruction to the urinary discharge arising from the coagulum which occasionally forms in the bladder and ureters, and from which an attack of inflammation may follow.

Diagnosis.—Though there is no other form of hemorrhage with which hematuria is liable to be confounded, yet, in connection with certain diseased conditions of the system, and morbid states of the urinary secretion, it becomes so essentially altered as to present some difficulty in distinguishing it from bloody urine. Thus, in certain diseases, occurring in some systems, the urinary secretions present a reddish-brown appearance, which, taken in connection with a thickish sediment, deposited upon cooling, gives to it very much the appearance of bloody urine. A somewhat similar appearance is sometimes seen in gravel, or limy deposits in the

urinary secretion, on the decline of a highly febrile state of the system. The urinary secretion may be greatly influenced by substances taken into the system either as medicine or food. Thus madder or cochineal taken as medicine, or red beets as food, will impart to the urine the tint, or coloring matter, peculiar to each. But if a careful examination should fail to be satisfactory, you will find it a good test to allow the urine to stand some time; when, if blood is present, it will be found precipitated in the bottom of the vessel, while the upper portion will present the clear color of the natural urine; and a portion of the deposit, placed on a shovel over the fire, will coagulate, or a piece of white linen, dipped in the bloody urine, will be colored red. Whereas, if it be urine only, the linen will not be stained red, and upon heating, instead of being thickened and coagulated, the ordinary deposit from urine upon cooling will again become fluid. This point, however, can be settled beyond question by microscopic examination. The urine discharged by females, during the menstrual period, might readily be mistaken for bloody urine, and, without careful investigation, one could be easily misled, if deception was intended; but, in such cases, the usual inquiries will determine the question beyond any doubt.

Causes.—One of the most common causes of bloody urine is the use of large doses of spirits of turpentine. An over dose, however, is not always required, as I have known hematuria to follow the administration of that medicine in small doses, and Dr. Wood mentions an instance of bloody urine from the inhalation of the vapor of turpentine. Some individuals show a peculiar susceptibility to the action of this medicine on the urinary organs. From the well known peculiar effects of cantharides upon the neck of the bladder, that article might be expected to exert a particular tendency to hematuria, and may, therefore, be mentioned as one of the causes of that disease.

Hematuria is a common symptom in certain calculous affections, simply from the mechanical effects of the calculi on the bladder. But any other causes operating mechanically upon the different organs and parts of the urinary apparatus may produce the affection. It is in this way often produced by falls, blows and other injuries. It is said, also, to be produced by a sudden suppression of the menstrual secretion, and an arrest of long-continued hemorrhoidal discharges. It may, likewise, result from any slight causes that tend to produce a local determination, where either from

hereditary predisposition, or accidental tendency, a condition of those organs favorable to the disease exists. Thus where there is any considerable hereditary tendency to urinary hemorrhage, exposure to cold would be liable to produce capillary obstruction in the parts thus constituted, and the bloody urine would be likely to follow.

The *pathology* of hematurea presents nothing differing specially from the general class of hemorrhages. Like other forms, it most frequently results from local engorgement, without any disorganization of the parts involved. This is most likely to occur in those constitutions having a strong general tendency to hemorrhage. It is a very common symptom in certain stages of many forms of disease of a low grade, in which a vitiated state of the blood, or deficiency of fibrin exists. Bloody urine is generally an accompaniment of inflammation of the kidneys or bladder, and it is also very common in most cases of urinary calculi.

Treatment.—When the history of the case furnishes a reasonable clue to the cause of the difficulty, the first indication, in the treatment, is to remove the cause, and counteract the effects it has produced. If the disease has been caused by the use of spirits of turpentine, or cantharides, those medicines should be immediately suspended, and the patient directed to drink freely of the mucilage of marsh mallows, or, if this can not be obtained, the mucilage of slippery-elm or flaxseed may be given. But if the marsh mallows can be obtained, it is by far to be preferred, as having more decided diuretic properties than either of the others. At the same time, if the patient is suffering from a severe pain, a cup or two may be applied to the seat of the difficulty, and followed by hot fomentations of hops, and the internal use of one-eighth of a grain of acetate of morphine. When it results from associated affection, and especially if the case presents evidences of considerable local congestion, cups should be applied as before directed, and the free operation of a speedy cathartic such as the compound powder of senna and jalap with cream of tartar, should be procured. Meantime, the free use of a strong decoction of peach leaves, or the bark of the twigs, should be directed. Few remedies exercise a more sensible and curative effect in any disease than this decoction does in hematurea and it may be given in almost any case with which it may be found complicated. It should be administered freely; and, fortunately, when properly prepared with a little loaf sugar, it can generally be borne in sufficient quantities to answer the purpose.

Few affections respond more promptly and yield more readily

to the operation of appropriate remedies than most affections of the urinary organs, and, therefore perhaps fewer remedial agents are generally prescribed for these than for most other disorders. The peach leaf decoction will be found a very valuable remedy in those cases of hematuria attendant upon the low forms of disease heretofore referred to. In such cases, a mild and unirritating tonic is indicated, and the peach decoction will answer the purpose in this respect, as well as fulfill the indication furnished by the hemorrhage. It may be given in wineglassful doses every three hours, or oftener, if desirable. Cases in any way connected with, or produced by, periodical or habitual evacuations, should be treated upon the general principles heretofore directed for such complications. Thus, if hematuria is found to result from a suppression of the menstrual secretion, while the urgent symptoms are palliated by the various measures directed for cases produced by other causes, or by such of them as the symptoms may indicate, more radical and permanent remedies, calculated to restore the disturbed uterine function should be administered. So also with other diseases for which hematuria is substituted, the measures best calculated to bring about a restoration in those functions found disturbed, should be instituted.

Notwithstanding the more active symptoms of this disease are occasionally produced by spirits of turpentine, the more passive form of the affection will often be benefited by the internal use of the same medicine in appropriate doses. Fifteen or twenty drops may be given at a dose, and repeated for a time every two hours. The bowels in all cases should be kept moderately free, either by appropriate diet, or by injections, if they can be made to answer the purpose, and, if not, by mild aperients. The antidyspeptic pill (*pil. aloë's comp.*) will answer this purpose, and may be given one every night and morning, or two at night, or every other night. The diet, in all cases, should depend on the state of the system, and during the symptoms of active hemorrhage patients should be kept as still as possible.

LECTURE LXXII.

LOCAL DISEASES—CONTINUED.

Dropsy: Definition; Two General Forms—Serous and Fibrinous; Serous Dropsy most Common; Fluid described; Its Origin; Condition of the Blood; Provisions of Nature to Prevent and Remove Dropsical Effusions; Test of Serous Fluid;—Fibrinous Dropsy; Chemical Composition; Cause of Variation; Origin of the Fluid; Symptoms of Dropsy in General; Causes; Prognosis; Treatment.

DROPSY.

Although modern research has done much to relieve the pathology of dropsy from difficulties which had greatly embarrassed its successful treatment, yet the latter has not been improved to the extent which might have been expected. At least I have not found in the standard authorities some practical truths of the highest importance in the treatment of dropsical affections, which I have learned from experience, and which I will endeavor to present in their proper place for your consideration.

Dropsies are defined to be “morbid collections of aqueous fluids in the body.” They are mainly confined to the serous cavities and parenchyma of certain organs. Dropsical fluids are found inclosed in accidentally-formed membranous sacs; these are termed hydatids, and are not properly comprehended in dropsical affections. I propose in this connection to consider only those forms of dropsy in which effusion into the serous cavities occurs, such as the peritoneal sac, constituting *ascites*; the pleural cavity, constituting *hydrothorax*, and the like; and that which occurs in the cellular tissues, constituting *anasarca*. In the first place, however, I will consider the general proposition, and thereby economise the time that would be occupied in discussing the pathology of dropsy as connected with the several kinds or forms.

Modern authors divide dropsical affections into *serous* and *fibrinous*, and predicate the distinction, which is well sustained by chemical experiments, upon the origin and character of the two effusions. In serous dropsies the fluid is identical, in every respect, with the serum of the blood. Though each case examined

may present a slight difference in the chemical properties of the effused fluid, yet the difference is no greater, in this respect, than it is between the serum of different individuals, as found by Paget in a series of experiments performed by himself. In fibrinous dropsy, the effused fluid is found to contain a portion of dissolved fibrin, resembling, in its chemical composition, the plasma of the blood. (*Vogel.*) These different forms of dropsical effusion do not always present the unmixed properties of the two typical fluids referred to, but are frequently more or less mixed with blood, pus, and other extraneous substances.

Serous dropsies are far the most common, and indeed constitute most of the dropsical affections we are called upon to treat. The fluid found not only in the cellular membrane of the system, but also effused into the cavities, is generally limpid, or but slightly colored, occasionally turbid, yellowish, slightly green or opaque, possessing generally an alkaline reaction, and of a thin or fluid character, though in some instances quite viscid and thick. Sometimes slight traces of epithelial cells, blood corpuscles, and other products of organic substances, and occasionally deposits of inorganic matter, are observed when examined under the microscope. The most general appearance of dropsical fluids is nearly colorless or of a slightly yellowish or green color, and this difference is by no means a necessary character, as it is dependent on bile pigment. Apart from these accidental admixtures, the chemical composition of dropsical effusions is identical with the serum of the blood. The predominating substance found in all fluids is water; besides this, dissolved albumen, extractive matter, fat, and various salts, are the main ingredients of serum. The following is about a fair average of the results obtained by different chemists who have examined the serum of the blood, and dropsical fluids of the kind I am now considering :

SERUM.		DROPSY.	
Water, - - -	905.0	Water, - - -	920.0
Albumen, - - -	78.0	Albumen and	} 71.5
Extractive matter,	4.2	Extractive matter,	
Fat, - - - -	3.8	Salts, - - - -	8.5
Salts, - - - -	9.0		
	<hr/> 1000.0		<hr/> 1000.0

Thus it will be seen that no more difference is found to exist

between the serum of the blood and the effused fluid in what is termed serous dropsy, than is fairly referable to accidental circumstances, or than would grow out of the difference in the constitutions of different persons.

In regard to the *origin of the fluid* in this form of dropsy, it may be remarked that its identity, in chemical composition and sensible properties, with the serum of the blood, indicates beyond a doubt that the one originates from the other, and as the serum is a necessary portion of the blood, and is constantly found in all sanguiferous tubes, its priority of existence is a matter of course. Various experiments and natural phenomena show that every impediment to free circulation in the venous system, or to any part of it, is accompanied by dropsical effusion into the surrounding structure of the veins thus affected. This may result in two ways, both of which may occur in dropsical diseases. First, from mere pressure, produced by the obstructed state of the venous circulation, which frequently happens in the course of gestation when long continued pressure is made upon the iliac veins, and also results from the pressure of tumors and other mechanical obstructions; and secondly, from some slight obstruction in the veins arising from a predominance of serum in the circulation, which is quite liable to be connected with a weakened condition of the tissues in the walls of the vessels. Dropsies, therefore, may be local, resulting from pressure upon the trunk of an important vessel; or they may be both local and general, as when the condition of the blood, and the weakened state of the vessels, produce a general venous engorgement or obstruction. Thus general dropsical effusions, and anasarca swellings, are the common attendants upon organic disease of the heart and lungs, producing habitual venous congestion. The same results frequently follow the want of healthy distribution of nervous energy in paralytic affections.

The majority of the cases which we are called to see, result from the *condition of the blood*, and this is by far the most important point to be observed in accounting for the affection. Magendie, in his usual perspicacious method, found that dropsical effusions follow defibrination of the blood, either by direct chemical action upon the fibrinous element, or by abstracting largely from the blood and thereby effecting the same result, or by injecting large quantities of water into the vessels. I need not refer you to the frequent dropsical cases that follow either from excessive bleedings in the treatment of certain inflammatory diseases, or from profuse

hemorrhages, and from other disorders in which an impoverished fibrin is a prominent symptom, such as anæmia, consumption, and the like. Impoverishment of the blood and dropsical effusion may also result from long continued torpor in the cutaneous transpiration, and from suppression of the urinary secretion, by which the watery or serous portions of the blood are retained in the circulation producing an extensive fullness of the vessels, and destroying that nice equilibrium in the composition of the blood, found by direct experiment to be indispensably necessary to healthy circulation. In this state of things, for the purpose of keeping up a due proportion in the component elements of the blood, nature immediately sets about the process of disposing of the excess of serum by exosmose, or the mechanical percolation of the fluid through the coats of the vessels, a process which is facilitated by the adaptation of the excessive fluid to the anatomical arrangement of the venous tunics. There can be little doubt that this economy of nature greatly controls dropsical accumulations, and disposes of the excessive fluid in this way for the cure of the disease.

Deficient absorption is another cause of dropsical accumulations, in which both the veins and lymphatics may be at fault. The part which seems to be assigned to the lymphatics in the disposition of effusions, is in precise accordance with their conceded functions in the repair of the animal system. The present prevailing doctrine in regard to growth or repair, and the decay and disposition of the materials of the body, ascribes to the *lacteals* the function of absorbing the chyle from the intestines, and thus carrying into the blood the materials necessary for growth and renovation, and to the *lymphatics* the office of taking up and carrying into the blood the stale and worn out materials of the solid constituents of the system, thus making room for the fresh supplies furnished by their co-laborers in the cause of animal life; while the veins seem to stand as sentinels at the portals of vitality, imbibing the serous fluids exhaled from the different serous surfaces and from the meshes of the cellular membrane, disposing of any undue amount of the same fluid that may accumulate in the circulation, and thus perpetuating the proper and natural proportions in the component principles of the blood. In this view, the venous radicals would dispose of the inorganic properties of the serous accumulations, and leave the smallest portions of organic substances, or such of them as can be or may be necessary, to be disposed of by the lymphatics of the parts involved. This doctrine has been

amply sustained by various experiments made at different times, but especially by Magendie in his researches into the blood. Says Tweedie: "It has been proved that fluids may pass into and out of the veins through their parietes, independent of any vital process, and by mere physical imbibition and transudation; so that when the veins are distended to a certain point with watery fluid, the introduction of more of the same fluid through their coats is impeded or prevented; and even when the distention is still greater, the aqueous part of the blood may pass in the other direction out of the vessels. On the other hand, when the veins are comparatively empty, the serous fluid passes readily into them, or in common language is absorbed. The venous absorption is explicable, therefore, upon the principles of endosmose and exosmose." The rapidity with which fluids are thus absorbed or exhaled, depends somewhat upon the character of the fluid to be disposed of, but more upon the condition of the circulation, as regards the fullness of the blood-vessels. Thus, says the same author, "when the vessel is moderately full, the exterior fluid passes uninterruptedly inward, and is conveyed away by the internal current. When, on the other hand, the vessel is much distended by its contents, the continued fluid, or its thinner part, passes continually outward. And there is an intermediate distention, at which the pressure is just enough to prevent the transit of fluid in either direction. Magendie found, accordingly, in an ample, well conducted and conclusive series of experiments, that by regulating the conditions of the comparative emptiness or fullness of the circulating system, he could accelerate, retard, or suspend altogether the operation of a poison dissolved in the humors of the body. In other words, he could thus accelerate, retard, or prevent the process of absorption or imbibition through the blood-vessels."

I need scarcely say to you that there is constantly going on, from all the surfaces of a healthy system, such as the walls of the shut cavities, the cellular tissues of the whole system, and the outer surface of the body, an exudation of serous fluids, for the purpose of moistening, in order to prevent adhesion, and promote a free movement, of the parts, and as a renovating process for the purposes of health. This is shown very clearly by the moist condition always existing in those parts, and by the moist vapor observed upon opening the cavities of healthy animals, as well as by the natural state of the skin. This exudation being constant, would necessarily accumulate in the shut cavities, and prove fatal,

but for a counteracting operation which is just as constant. Thus while the natural and healthy balance of the system continues, only the amount necessary to the legitimate purposes of the parts will be exuded. But when there is either an excessive accumulation in the blood of the particular fluids constituting the dropsy, or any undue pressure in the trunk of an important vessel, or a general state of venous obstruction, we may confidently expect to find a corresponding excess in fluid in one or more of those cavities, or in the cellular tissues of the body.

There is, however, another protection against these accidental disturbances, or impertinent interferences with the economy of life, paramount to every other guard that appears to invest the healthy system, and which should never be overlooked. It is the function of the kidneys. The disturbances referred to may all take place to a very great extent, menacing the health, and perhaps the life, of the individual; but if the function of the kidneys is undisturbed, those fearful threatenings will be disregarded, and the healthy balance of the system be maintained. In this we see an admirable system of protection and safeguard, which is manifestly thrown around almost every function of the different organs of the body, in order to recompense for any disturbance that may be produced. On this subject Tweedie remarks: "There are special sympathies of this kind established between secreting parts. It is probable that so long as other circumstances remain the same, the aggregate amount of water thus expelled from the system, can not vary much in either direction without detriment to the individual, manifested by symptoms. But we are sure that the quantity furnished by each secreting surface may vary and oscillate within certain limits consistent with health, provided that the defect or excess be compensated by an increase or diminution of the ordinary expenditure of the watery liquid through some other channel. Sound health admits and requires this shifting and counterpoise of work between the organs destined to remove aqueous fluid from the body.

"The sympathy or compensating relation here spoken of, is more conspicuous in regard to some parts than others. The reciprocal but inverse accommodation of function that subsists between the skin and the kidneys, affords the strongest and most familiar example. In the warm weather of the summer, when the perspiration is abundant, the urine is proportionally contracted and scanty. On the other hand, during winter, when the external

transpiration is checked by the operation of external cold, the flow of dilute water from the kidneys is strikingly augmented. All this is well known to be compatible with the most perfect health. But supposing the exhalation from one of these surfaces to cease, or to be diminished, without a corresponding increase of function in the related organ, or in any organ communicating with the exterior, then dropsy in some form or degree is very apt to arise. The aqueous fluid, thus detained in the blood-vessels, seeks and at length finds some unnatural inward vent, and is poured forth into the cellular tissue, or into the cavities bounded by the serous membranes."

Serous dropsical accumulations may be *known by the fluid albumen* which is found by chemical tests, or the application of heat, to exist as one of its constituents. By heating a small quantity of the fluid in a silver spoon, or any other appropriate vessel that will not influence the albumen, a whitish coagulum will be shown, or the precipitate may be made by the addition of a small portion of nitric acid. There are some cases, however, in which so small an amount of albumen exists in the effused fluid as to be inappreciable either by heat or nitric acid. In such cases it will be sufficient to determine that it is not fibrinous exudation, which will be shown by the absence of fibrin, a spontaneous coagulation being recognized upon cooling.

Fibrinous dropsy is distinguished from the serous by the dissolved fibrin which an appropriate examination readily detects, and especially by the difference in the circumstances and condition of the system in which it occurs; though it is liable to occur in the serous cavities or cellular structure of the system. Like serous dropsy, the fluid is found to present the same physical characters and chemical properties, whether it occurs in the cavities or cellular structure. In its physical appearance, when first discharged, it resembles in every respect the purely serous effusion; a microscopic examination develops more difference, though not sufficient to settle its distinctive peculiarities. Upon cooling, or sometime afterward, a homogeneous, jelly-like mass of the whole fluid will be observed, which upon standing for some time will be found to separate into a more consistent, yellowish or reddish colored clot of fibrin and a clear but slightly yellow fluid, resembling the serum of the blood. By thoroughly washing the clot, a moderately firm fibrinous substance will be obtained; and by firmly pressing it between a soft linen to deprive it more perfectly of the serous or

watery substance still retained in its meshes, distinct stringy fibers will be seen. This fibrinous portion, in some instances, coagulates in the cavities during life, and when furnished in certain amounts forms organized structures, and promotes adhesions between opposing surfaces of serous membranes.

The *chemical composition* of this fluid is identical with blood deprived of its corpuscles; in fact it is the serum of the blood with fibrin dissolved in it. It contains water, dissolved fibrin and albumen, fat, extractive matter, and salts; thus showing every element but the corpuscles. It is said that in some instances the quantitative composition of fibrinous dropsical effusions, and the serum and fibrin of the blood, are precisely alike. (*Vogel.*) In this as in serous dropsy, the identity is so striking between it and certain principles of the blood as to render it difficult to avoid the conclusion that its source must be from that fluid. The existence of this peculiarity in certain cases of dropsical effusion must be admitted. The general resemblance, and especially the chemical composition, and the physical character of the fluid upon standing, have too often been recognized to render a distinction any longer a matter of doubt. But not to detain you by an elaborate consideration of the various experiments that have been made, and the various reasons given, to account for the distinction and difference of origin, I will give a short paragraph from *Vogel*, showing "that serous dropsy owes its origin to a permeation of the fluid of the blood through the walls of the veins; while the fibrinous dropsy arises from a similar permeation through the walls of the capillary system."

"In favor of this view may be urged: firstly, the different properties of the walls of these two divisions of the vascular system. The veins have thick walls, consisting of several layers of cells and fibers, while the walls of the capillaries are very thin and delicate. It is true, that we can not accurately estimate the differences in their endosmotic properties, but from analogy (from all the experiments that have been made in this department) we may conclude that the product of endosmosis, in the former case, is more dilute and poorer in solid constituents; and that in the latter, it is more concentrated and abundant in them. Secondly, as we have already shown that serous dropsy is associated with dilatation of the veins and an attenuation of their walls, so we learn from the microscopic examination of the capillary system, that a dilatation of those vessels and the attenuated condition of their walls, precedes, and is associated with the occurrence of the fibrinous fluid, either in

the parenchyma of an organ, or in a cavity. The simultaneous occurrence of the effusion and the modified condition of the vessels is, however, so constant, that we may conclude with all the certainty possible in such cases, that the dilatation of the capillaries is the cause of the effusion. It naturally follows, that in the gradual transition of the capillaries into veins, there is no rigid limit between fibrinous and serous dropsy, and that one may easily merge into the other. Further, many causes, producing a dilatation of the capillaries can likewise act in a similar manner on the veins; hence the two processes are very frequently associated together; and thus, in the fluid of serous dropsy, we very often meet with small quantities of fibrin."

In this, as in all other effusions from the body, both its physical and chemical character will differ somewhat, according as the *composition of the blood* is found to vary in different constitutions. Thus, in systems abounding in a large proportion of fibrin, we should expect, in case of dropsy, to find a more abundant supply of that principle in the effused fluid than in other systems; and so, when an undue amount of serous or watery fluid exists in the circulation, and circumstances occur capable of producing fibrinous dropsical exudation, no doubt can be entertained that the serum would be found largely to predominate in the effusion over the usual proportion in such cases. These facts are in accordance with all analogies, and are sustained by various experiments in this and similar cases.

The circumstances in which fibrinous dropsy occurs are such as render it quite certain that the origin of the effusion is from the capillary vessels. The exudation that takes place in pleuritic inflammation—often to an extent sufficient to constitute hydrothorax, and in the early stage forms the plastic membrane that constitutes the uniting medium in cases of adhesion, is, no doubt, a fair specimen of the fibrinous dropsy. And, in short, it is that form of dropsy which comes on rapidly, associated with, or immediately supervening upon, inflammatory affections; while the serous dropsies originate in a more weakened condition of the system, come on more gradually, and are unconnected with any inflammatory action, but generally accompany a low grade of diseased action connected with debility and venous congestion.

Symptoms.—I shall not detain you by enumerating the symptoms which characterize the particular form of dropsies, but shall consider only the general phenomena of the disease. From what has already been said, it will be seen that dropsical affections vary

in their mode of approach; coming on very slowly and gradually in some instances, with but little disturbance beyond a general manifestation of deterioration of the blood, and a corresponding change in the general feelings and appearance of the patient. But other cases—which are most likely to be connected with the fibrinous form,—are preceded by general disturbance of the whole system; such as more or less of febrile symptoms, with hot, dry skin, frequent pulse, furred tongue, and derangement of the bowels, either loose or costive. It may follow directly upon an attack of inflammation, and ultimately develop all the symptoms of the disease. Or it may follow more slowly upon a protracted form of fever, in which visceral disturbance is a prominent symptom, accompanied by a low grade of morbid action not particularly defined. But in whatever form the affection is presented, diminished urinary secretion is a uniform symptom. This, however, can not always be readily determined, as what would be a diminished urinary secretion sufficient to produce disease in one case, might be a sufficient amount to answer the purpose in another case; so that the relative amount that is daily discharged will have to be the rule to determine its influence in the production of the disease. The views I have endeavored to inculcate, in regard to the pathology of dropsy, fully justify the observation that cases of the disease here and there occur in which the urinary secretion may be as free as in health. These cases will be found connected with a large predominance of serum in the blood, associated with great inactivity of the skin and other secretory organs. The character of the urine also differs; in most cases it is dark brown or reddish brown; but in some it exhibits various shades from very dark and almost bloody to light or yellow, with sediments of different kinds, according as alkalies or acids predominate in the system. In most cases of the acute form of the affection the urine will present the high or red color common to febrile or inflammatory affections; when complicated with hepatic disturbance the urine is very apt to partake of the color of that secretion; and when complicated with organic renal affections the urine is more highly colored, and often mixed with blood. In the anasarcaous exudations attendant upon Bright's disease, the urinary secretion presents, upon proper examination, an element not common in other forms of dropsy, though I am convinced it will not be found to differ very greatly from the secretion sometimes connected with low grades of irritation elsewhere located. This

peculiar substance can be detected in various ways, but the most eligible is by heat or the use of nitric acid.

An abnormal condition of the skin may always be looked to as one of the most unvarying symptoms of dropsical affections. A peculiarly dry and husky or parched feeling of the skin will be found the common condition, and there will be great difficulty in producing perspiration by any means. The bowels are sometimes irregular, perhaps most frequently costive; though this is an occasional symptom, and when present a troublesome one, especially if the irregularity takes the form of diarrhea. In most cases patients are harassed with a constant thirst, often to an inconvenient extent, though the supply of its demands furnish the materials for the increase of the disease.

As before stated, the particular symptoms that belong to the individual affections will not be enumerated at this time, and I therefore pass on to the consideration of the

Causes.—It will be perceived that the remarks already made in connection with the pathology of the disease, the condition of the system, and the circumstances calculated to develop it, comprehend most that can be said in regard either to the exciting or predisposing causes. But I will repeat, in a summary way, the principal influences that are generally recognized as producing dropsy. Whatever is calculated to produce local, or it may be general, irritation, though coming short of active inflammation, will predispose the system to the disease, and the concurrence of certain other influences is only required to develop the disease itself. Thus, exposure to sudden changes of temperature is liable to prevent the natural elimination of perspirable matter, which is thereby retained in the blood, and from this or some other cause, the kidneys either fail to perform their usual secretory function, or do not fulfill their customary vicarious evacuation, and serous effusion is liable to follow. There is a peculiar tendency to this result, when the system is strongly predisposed to inflammatory action, such as follows measles, scarlet fever, and most of the other eruptive affections. But local dropsies often arise from local obstruction, either in the vessels of the organ involved, or the large venous trunks which return the blood to the center. Thus, the pressure of the gravid uterus in the latter stage of pregnancy is often followed by anasarca of the lower limbs. In the same way, congestion of the portal circulation, by obstructing the return of venous blood from the abdominal viscera, produces an

obstruction in the vessels of the serous membrane of the bowels, and serous effusion follows. Hence those influences productive of hepatic affections are often the causes of ascites.

The causes already enumerated may contribute, also, to produce a condition of the blood favorable to serous exudation. But whatever tends to impoverish the vital constituents of the blood performs an important part in the production of dropsy. Thus, protracted diseases, especially of the liver, lungs, and other important organs, and unwholesome or insufficient food, are among the causes of this disease. This is most likely to occur when the patient has been the subject of severe medication without obtaining relief, and is especially the result of the constitutional influence of mercurial remedies. But no cause is more certain to develop dropsical affections than disease of the kidneys, by which they are prevented from eliminating the usual amount of fluid, a part of which is thereby retained in the system; and in that class of affections is Bright's disease, which I have already discussed, and which most frequently produces anasarca, and, probably, serous effusion in the ventricles of the brain. Diseases of the heart, too, are very prolific of influences productive of dropsical difficulties, and the character of the disease in such cases will depend upon the local predisposition existing at the time. This will be found to be one of those general influences operating upon the whole venous circulation, producing of itself no particular determination, and therefore the special attraction will be to that organ most strongly predisposed.

Prognosis.—In general terms, dropsies may be considered among the medicable affections; though few diseases require more of qualification in this respect. Effusions unconnected with affections of the kidneys may generally be removed, and even when the renal organs are the special seat of disease, if appropriately treated at an early stage, may generally be cured; but if connected with long standing and severe organic disorder of those glands, but little hopes can be entertained of final restoration. A difference will be found in the curability of different dropsical affections, and also in different constitutions. Thus, hydrothorax is not as readily relieved as ascites, nor are those cases, which approach very gradually and are associated with an exhausted condition of the system, as readily cured as those which approach more suddenly and in better conditioned systems. It is far more readily removed in children and young persons than in the aged and infirm. It is

often removed in an incredibly short time, but in other instances becomes a slow, tedious, and protracted disease, though it may ultimately be cured. The wonderful resources of the system for the cure of disease are strikingly illustrated, in some cases of dropsical affections, by the amount discharged from the kidneys upon removing the source of the difficulty; as, for instance, in the case of confinement preceded by extensive dropsical accumulation.

Treatment.—To enter into the details of the treatment of dropsical disease, at this time, would be to anticipate what it will be necessary to repeat when we come to consider the several forms of dropsy separately. I shall, therefore, confine myself to a statement of the general principles by which we should be governed. This is the more necessary, as each form of the disease will require some modification of the treatment adapted to the others. But in whatever form it may be presented, the most important point is first to arrive at the *cause* of the disease, and the condition of the organs involved. Thus, if it has been produced by a sudden check of perspiration, a restoration of this important emunctory would be one of the first means of cure to be attended to; while, on the other hand, if some increased local determination was found connected with the obstructed perspiration, measures should be taken to relieve the engorged vessels, and equalize the circulation. No difficulty will be experienced in fulfilling the varied indications which such a case may be supposed to present. For, in fact, the remedies and measures, best calculated to relieve local engorgement in any case, will be most efficient for the removal of these effusions.

But after removing the cause that may have largely contributed to bring on the attack, or after removing any local affection that may stand in some connection with the disease, the next most important and only reliable means of permanent relief is to procure the full and free action of the skin, kidneys, and bowels, the great emunctories of morbid and effete materials, whose functions are necessary to a healthy state of the system, and especially important for the cure of disease. In addition to rallying these important secretory functions, and often as the best and most effectual means of accomplishing that object, general restorative measures and tonic remedies become a very necessary part of the treatment, and, in fact, their influence in building up the waning energies, and invigorating the weakened organs of the body, affords, in many

cases, almost the only means of restoring the secretory functions to their healthy action.

To be a little more specific, and yet without giving special directions for the administration of the different remedies applicable to particular cases, I will detain you a short time by considering some of the most prominent measures calculated to fulfill the general indications of this class of diseases. Prominent among the remedies designed to fulfill the indications of these affections, by acting upon the kidneys and thereby increasing their secretion, are diuretics. It will be observed that a pretty constant symptom, attendant upon most cases of dropsy, is a diminished urinary secretion, and experience has abundantly shown that, when remedies fail to increase the action of the renal organs, but little permanent amendment may be expected; while, on the contrary, when the measures used are successful in exciting a more vigorous action, and in sensibly and permanently increasing the amount of the urinary secretion, they will rarely fail to diminish, as sensibly, the serous exudation which constitutes the apparent difficulty in the case. It is often difficult to determine whether a remedy possesses specific diuretic properties, or whether it acts by diminishing venous congestion, or by the influence it exerts upon other glandular organs, thereby relieving the system of those embarrassments concerned in perpetuating the disease. But we may reasonably conclude that those remedies, which experience has abundantly shown uniformly increase the urinary secretion, do exert specific influences upon those glands, and are therefore properly classed among diuretics. It is not, however, those remedies alone that possess the property of acting upon the secretory function of the kidneys that are found the most efficient in all cases, in the cure of dropsy; but those remedies, that seem to exercise an unmistakable influence upon venous congestion, and thereby indirectly influence the functions of the renal organs, are properly the most effective and reliable in these cases.

It must be confessed that the treatment of dropsies is more empirical than that of most other affections; though it by no means detracts from the value of a remedy that we are unable to determine whether it relieves the disease by its direct action on the kidneys, or in some other way. We often administer medicines of the highest repute as diuretics,—those which are supposed, by the concurrent agreement of the profession, to act upon the secretory functions of the kidneys,—without realizing the usual

effect in certain dropsical affections; but by administering a remedy of another class, and one that can not be said to act directly upon the kidneys, the most sensible relief is afforded to the dropsical symptoms, and apparently by the manifest increase of the urinary secretion. Among the diuretics that may be said to act as such directly, few will be found to produce a more sensible effect than a decoction of *sambucus canadensis*, or white-elder bark, in cider. It may be given in wineglassful doses three times a day. Another remedy, answering a similar purpose, and in some cases acting more promptly, is a decoction of the *asclepias syriaca*. In many cases a decoction of *mullein* leaves will be found to increase the urinary secretion in a sensible manner. I have also found the *super-tartrate of potash*, in from two to four drachm doses, mixed in two ounces of water in which is dissolved an ounce of rock candy, given three times a day, a very excellent and acceptable diuretic. The following formula is used in the preparation:

R. Cream of tartar, ʒiiss.

Rock candy, ʒiij.

Mix. S. All to be taken at three doses.

Nitrate of potash has also, in many cases, a direct influence in stimulating the kidneys to increased action, and may be given in twenty-grain doses, two or three times a day. Many other substances are known to act directly in the same way, but are not held in very high repute as curative in dropsical affections, being more appropriate for certain fevers and other diseases, in which they afford some relief by a moderate increase of the urinary secretion.

But there are other remedies, far more reliable in the cure of dropsies, which possess no direct diuretic properties, but afford relief by their effects upon the circulation and other functions, and, indirectly, upon the renal secretion, thus giving them the apparent properties of diuretics, and entitling them to rank in that class of therapeutic agents. Such, no doubt, is the character of the *apocynum cannabinum*, one of the best and most reliable remedies for dropsical affections. The same may be said of many other articles, known to be more reliable in the treatment of dropsies than those whose action is specially directed toward the renal organs. This, no doubt, is the proper explanation of the effects of *digitalis*, *squills*, *tobacco*, and many other medicines recommended for these diseases.

In many cases cathartics exercise a more important influence in curing dropsies than any thing else that can be given. They may produce their beneficial effects in various ways, but the most deci-

ded and obvious is by their direct diversion of a large amount of serous matter from the circulation, and the consequent change from an exosmose to an endosmose of serum through the venous tunics; and also by their influence on the portal circulation, relieving the venous obstruction generally, and the abdominal circulation in particular, and by this means diminishing the excessive exudation that is producing the disease. The positive amount of serous fluid abstracted from the mass of the circulation, by the full and free operation of a hydragogue cathartic, can not be very exactly determined, though little doubt can be entertained that it would far exceed that which can with any safety be taken by bleeding. From this it can be inferred that the utility of this class of medicines, in the treatment of dropsical affections, can not be too highly estimated, and it is certainly not surpassed by any others used for this purpose. It is generally a matter of importance, in selecting, to discriminate the particular agent adapted to the case in hand; as a general rule, those are to be preferred, and are the most reliable, which are known by experiment, to act with special reference to the absorption and evacuation of the serous fluid, or those which at the same time, act upon the portal circulation. With this view, I have been much in the habit of administering a compound of *apocynum* and *podophyllum* in the form of a sirup, with the addition of a portion of best gin, and have found it the most effective preparation that I have ever seen used. While it operates efficiently upon the circulation, by diminishing the arterial action, its influence will be no less apparent in producing a copious serobilious evacuation from the bowels, and in increasing the urinary secretion. With such effects, it would reasonably be expected that a sensible diminution in the accumulated exudation would be occurring at the same time. Accordingly if the disease is anasarca or ascites, very apparent diminution of the œdema or abdominal tumor will be observed. This preparation may be given to fulfill the indication of an active cathartic, or, if desirable, of a powerful emetocathartic; or it may be given in such quantities as to secure one, two or three copious evacuations of the kind referred to, according as the condition of the patient and the extent of the disease may admit or require. Other purgatives, acting with more or less effect have been used, and often in the beginning of a case, when gastrointestinal irritation does not exist and is not to be apprehended, a large dose of the compound powder of senna and jalap with cream of tartar makes an impression of a most favorable character, and,

if not otherwise contra-indicated, may be repeated once in seven to ten days during the treatment of the case.

Dropsical affections connected with a highly deranged state of the stomach, will often be greatly benefited by the operation of an *emetic*, not only in the beginning of the treatment, but also occasionally during the progress of the case. Its beneficial influence will not be confined to cleansing the stomach, or even preparing that organ for the more ready operation of other remedies, but it not unfrequently exerts a more important influence upon the venous circulation, by removing obstructions from the venous ramifications, and thus creating in them a demand for absorption not otherwise accomplished. The relaxing and diffusible influence of emetics is too well-known to require remark.

Though the condition of the skin bears a very close relation to internal exhalation, and though elimination through this important emunctory is a certain mode of contributing largely to the cure of these affections, yet we can not expect the extraordinary discharge through this outlet that can be obtained from the bowels and kidneys; and we can not, therefore, administer active diaphoretics or sudorifics for the cure of most cases of dropsy, as their copious action can not be long continued. But mild diaphoretics, or such as keep up a moderate and healthy perspiration, if it be nothing more than insensible transpiration, will do much toward the cure. Those cases, however, which come on suddenly from cold, such as we frequently find following the exanthematous affections, will be greatly benefited, if not entirely cured, by a thorough sweat which may be repeated. In these cases the Thompsonian steam-bath would, without doubt, be beneficial, though the stimulating concomitants might be seriously objectionable. Whatever other, or internal measures may be resorted to for the purpose of exciting diaphoretic influences, sponge, shower or *douche* bathing should never be neglected.

Counter-irritation, over the part affected, where the effusion is kept up by local irritation or chronic inflammation, is a means by which you may often strike an efficient blow at the cause of the difficulty. Where the effusion depends, however, upon anæmic condition of the patient, and a relaxed condition of the tissues, the employment of counter-irritants is of no avail.

In regard to diet, different states of the system require a different course. Where there is an inflammatory condition, either general or local, a simple unirritating regimen should be prescribed;

but the anæmic and debilitated patient must be sustained by a generous and nutritious diet. Large quantities of water, or other drinks, should not be allowed, and yet it is not necessary to require the patient to endure the torture of thirst, which so generally attends dropsical affections. Small quantities, often repeated, will as effectually slake the thirst as large draughts. It is well also to recommend the use of cold diuretic infusions in preference to simple water or warm teas.

[In idiopathic dropsy depending upon a predominance of exhalation over absorption, the daily administration of one or two drops of croton oil, so as to keep up a free action of the bowels, is, I believe, the most efficient treatment that can be adopted. Dr. Fife of Birmingham, England, recommends doses of three minims, but I have generally found one minim a sufficient dose. It may be given in the form of pill with the crumb of bread, or in emulsion. S.]

LECTURE LXXIII.

LOCAL DISEASES—CONTINUED.

Hydrothorax: Definition; Symptoms; Percussion and Auscultation; Anatomical character; Causes; Treatment. Hydropericardium: Symptoms; Causes; Treatment. Ascites: Definition; Symptoms; Dissection; Diagnosis; Causes; Prognosis; Treatment. Ovarian Dropsy: Description; Encysted tumors. Anasarca: Symptoms; Diagnosis; Causes; Treatment.

HYDROTHORAX, OR DROPSY OF THE CHEST.

The term hydrothorax literally signifies *water in the chest*, but the ordinary understanding confines the accumulation to the pleural cavity. I shall consider the subject according to the latter signification.

Symptoms.—Accumulation of watery fluid between the reflections of the pleural membrane may be associated with a general *dropsical diathesis*, and thus be connected with other forms of the affection; or it may result from *local irritation*, and be connected with, or follow other diseases. To constitute the disease, the effusion must be sufficient in amount to embarrass the pulmonary functions. It is not enough that a slight quantity of serous accumulation should be found in post-mortem investigations, to constitute pleural dropsy; as that may result from cadaveric change, or from a mere temporary ascendancy of the exhalants in that membrane over the absorbents; or from an inequality in the balance of those vessels which furnish and remove fluids necessarily existing in all serous cavities. The accumulation, however, varies in different cases, and also in the different stages of the same case, producing symptoms corresponding to the extent of the effusion. It is manifested at an early stage by slight difficulty of breathing, greatly increased upon every unusual exertion, and aggravated by the recumbent posture. This oppression very gradually increases as the effusion accumulates, bearing in this respect, so far as the physical and general symptoms will enable us to judge, a very close relation. A distinctive symptom is the inability to lie upon the opposite side to the one affected, it being necessary in most

cases, even early in the progress of the disease, but especially in the more advanced stages, to adopt the semi-recumbent position; and when the accumulation has become great, the recumbent position can not be assumed without a sense of immediate suffocation, and hence the patient is compelled to remain in the erect position continuously. As the effusion becomes more extensive, the embarrassment of the pulmonary circulation, also, becomes more apparent, showing itself by the pale appearance of the face, a livid appearance of the lips and, often, of the hands, and finally the whole capillary circulation shows unmistakable evidences of imperfect aëration, produced by temporary obliteration of a large portion of the air-cells of the lungs from the compression of the pulmonary organs.

In this stage of disease, the point of the accumulation will be indicated by a more full, round and prominent appearance, by the intercostal spaces being pressed out nearly even with the ribs; and will be readily recognized both by the appearance and by a careful measurement. If the accumulation becomes more extensive, the position of the heart will be somewhat changed, and the intercostal spaces enlarged, and often rounded out beyond the surface of the ribs; a distinct fluctuation will be recognized on examination, and the vibrations of the voice will be more obscure than in health, and be very manifest by comparing the diseased with the healthy side. But it sometimes occurs in both sides at the same time, when this symptom will be of little value. It may, also, be confined not only to a single side, but to a circumscribed portion of the side affected, in consequence of adhesions, either occurring from the present attack or resulting from previous disease. Before the accumulation has become so extensive as to produce great embarrassment of the pulmonary organs, change of position will be accompanied by a corresponding change in the effused fluid; and it has been said that a distinct agitation of the water can be heard upon the movement of the chest. If the case is one of a general dropsical character, the extremities are liable to become anasarcaous, and frequently cedema of the face and some other parts of the system will be observed. But if the case has resulted from local irritation, without any general dropsical tendency, the case may go on to a fatal termination without any such occurrences. From whatever cause it may originate, a diminished urinary secretion will be found to exist, and a dry and husky condition of the skin. The pulse will vary in different cases; in some it will be but little affected; but the arterial action will in most cases be increased,

somewhat in proportion to the amount of irritation existing, and the embarrassment from the accumulation.

The most unequivocal evidences, however, are those afforded by percussion and auscultation. Even in the early stage the dullness on percussion will be apparent; but as the effusion increases, this becomes more sensible, gradually increasing until a complete dullness will be observed. In the early stage, the dullness on percussion will depend upon the position of the patient; when in an erect posture, the dullness will be found in the lower part of the chest, but as the effusion increases it extends gradually over the whole side. In no other disease does the dullness on percussion thus change, corresponding with the movement of the accumulation upon the change of position. Thus, in consolidation of the lung from any cause, by which dullness on percussion is produced, but little difference will be observed upon any change of position; but when the obscure sound results from watery accumulation before the effusion is so extensive as to firmly compress the lung, percussion will yield a clear and resonant sound on portions of the chest, where, by change of position, it becomes flat and dull. Similar indications are afforded by auscultation. In the early stage, more or less of the natural respiratory murmur will be heard on the whole side, though gradually diminishing as the accumulation increases, until but little can be heard at all. In the same way the resonance of the voice will be slightly obscured and at last entirely obliterated; but by change of position both the respiratory murmur and the ægophony will be heard in parts from which they are otherwise absent. But very similar phenomena are manifested in empyema, and are to be distinguished mainly by the attendant circumstances and associated symptoms of each case. In empyema, the course of the disease, the character of the cough, with the accompanying expectoration, not present in dropsical accumulation, and an increased instead of diminished vibration, which occurs in the formation of an abscess, are generally sufficiently diagnostic. Dropsical accumulations are more apt to extend to both sides, or to be more diffused if confined to one side; while empyema is more generally circumscribed by the adhesions, which accompany the formation of matter, and is rarely associated either with anasarca, or other symptoms of dropsical affections. I need scarcely say that the sanguineous effusions following injuries or wounds, will be readily distinguished by the circumstances of the case; and that those instances of exudation of blood, which rarely

occur, will be easily discriminated by the hemorrhagic tendency of the system and the absence of dropsical phenomena.

When dropsy of the chest results from pleuritic inflammation, and thus exhibits more the character of what is termed by some authorities *acute* dropsy, the characteristics of fibrinous effusion will be presented, and will rarely be disposed of without more or less adhesions, by interposing plastic formations between the opposing pleural surfaces. In this event, it will be rare for many other or general dropsical symptoms to occur, unless the effusion should follow upon a protracted pulmonary affection, consequent upon pleuritic inflammation. The effusion generally takes place very gradually, in most cases, whether it results from acute attacks of disease, or a more general predisposition. But in some cases of a general dropsical diathesis, a sudden effusion takes place into the pleural cavity, and the patient is overpowered by accumulation, and sinks almost before danger is once apprehended.

The *Anatomical Phenomena* presented in hydrothorax are what would be expected from the circumstances of the disease. One or both of the lungs, as the effusion affects one or both sides, are found greatly compressed: generally forced from the most depending position. But if the accumulation has been circumscribed by adhesions, either consecutive to the irritation resulting in effusion, or of an older date, the compression will show a corresponding boundary. But in cases of extensive accumulation, where the compression has been great, not only the small vesicles of the air-tubes will be obliterated, but bronchial tubes of considerable size will be destroyed by the extension of the compression toward the center of the organs. They will not, however, be totally or permanently obliterated, as they can be more or less inflated by blowing into the trachea after they are removed. The character of the effusion does not greatly differ from dropsical accumulations in other places, though in every situation this difference will depend upon the associated conditions. In cases connected with the general dropsical condition, the fluid will present nearly a clear watery or slightly yellow color, having the true character of serous effusion. But if the case has been accompanied by an engorged state of the capillary vessels, the effusion will have more of a sero-sanguineous appearance, or will be more limpid, but slightly thicker, resulting from the fibrin which it contains. The quantity also differs, and no doubt is greatly influenced by the same cause affecting the character. It varies from a small amount to quarts or even gallons.

Causes.—All those influences which have been mentioned as causative of dropsy in general, may be influential in producing hydrothorax. But the most common cause of this form of dropsy, I am well convinced, is the practice that formerly prevailed more than at present of bleeding in most forms of fever, and especially if any inflammatory condition was suspected of complicating the case. Slight sero-fibrinous effusion follows, or is associated with most cases of pleuritic inflammation, but not generally to an extent to produce embarrassment, if appropriately treated; and the small amount that may be supposed to exist, will be readily disposed of when the original affection is removed. But hydrothorax may readily be imagined to result from a general dropsical condition of the system, especially if any old pleuritic remains of disease exist at the same time; or it may be suddenly transposed when a low state of the vital powers characterizes the individual in whom pulmonary predispositions are strongly marked.

Treatment.—I have heretofore remarked that it is often easier to observe facts than to satisfactorily explain them. We may have ascertained by observation that certain remedies are successful in the cure of dropsical affections, the therapeutic action of which may not be well understood. Gravitation was no less a law before the fall of the apple suggested to Newton the true explanation of that law, and dropsical effusions are none the less speedily removed by certain remedies when used for that purpose, though they may not be generally prescribed by the mass of the profession, nor their action be clearly understood by those who do prescribe them.

I need not dwell upon the necessity of administering occasionally a pretty thorough hydragogue cathartic, in the treatment of hydrothorax, as an important measure for its removal; and I need scarcely repeat that I consider the compound powder of senna and jalap, with cream of tartar, among the most efficient and reliable remedies of this class that can be used. This physic will rarely be contra-indicated in this form of dropsy, and it will generally be proper to administer it once a week, or once in two weeks, though the bowels should be kept quite free with the other remedies to be prescribed. This remedy will be more especially indicated when there are some symptoms of a phlogistic character, and will require to be repeated oftener than in other cases where there are more well defined appearances of an exsanguineous and debilitated condition of the system. But in the latter case, when the serum abounds in the blood, greatly above its normal proportion, the

effect of this cathartic, though it may operate a number of times, is to increase the capillary circulation, and thereby favor, very rapidly, a more healthy assimilation than would otherwise take place, which will give tone and strength to the system.

But the prescription upon which I have mainly relied in this and most other forms of internal serous accumulation, is the apocynum cannabinum, or Indian hemp,* and podophyllum peltatum, prepared in the form of a sirup, and taken in doses sufficient to produce from two to four free evacuations from the bowels in twenty-four hours. I have usually prepared a quart of the sirup at a time, from an ounce each of the articles named, in decoction, afterward adding loaf sugar sufficient for the purpose, say about a pound to the quart, and a gill of good Holland gin. Of this a tablespoonful three times a day before eating should be given, but increasing or diminishing as the medicine is more or less active. In connection with this, I have generally administered about eight grains of the iodide of potassium twice a day, but frequently giving, as a substitute, the cider and elder preparation recommended for anasarca. This prescription will rarely disappoint your expectations in at least affording all the relief that may be looked for from internal remedies in this and kindred affections. I by no means claim that it is a specific, and will cure all the cases for which it may be prescribed, but that it acts efficiently in the way of removing from the system serous effusions, and oftener affords permanent relief in such cases than any other remedy with which I have had any experience. While it seems to unlock the great portal circulation in particular, it produces but little less marked effects upon venous obstruction, wherever it may be found to exist, and thereby promotes in the most effectual manner possible the endosmose of fluids through the venous tunics. Few if any known remedies have a more manifest effect in promoting the absorption of serous effusion, whether in the lungs or on the brain, whether in the peritoneal sac or ovarian investing membrane, than the apocynum, when given to the point of toleration without producing vomiting; by virtue of what peculiar property it produces this effect is not easily determined; and in fact whatever may be said on this point must be looked upon, in the present state of our knowledge, as merely theoretical. Its sensible effects when given

*The name Indian hemp has been applied by some writers to the *canabis sativa*, and there might be danger of mistake in prescribing the apoc. can. by that name, though it belongs to the latter from long usage.

in large doses, are emetic, diuretic, and moderately cathartic; at the same time, it acts as an efficient sedative, and promotes the surface transpiration in a sensible degree. The podophyllum as a powerful cholagogue cathartic, I take upon myself to say, is not half equaled, in its certain and efficient action in this respect, by any remedy known at the present time. And when appropriately given, I have every confidence that the preparation referred to will be found, on a fair trial, one of the most reliable prescriptions that has been recommended to the profession. As a variety, however, I have occasionally given a pill composed of squills, digitalis, alcoholic extract of taraxacum, and podophyllin, according to the following formula:

R. Squills, digitalis, āā gr. xx.
 Podoyhyllin, gr. v.
 Alcoholic ext. tarax. q. s. to form into a mass.
 Pulverize and mix.

Divide into twenty pills, one of which may be given twice a day, increasing until the effects are shown by diminishing the frequency of the pulse, and acting freely upon the bowels. While this is being administered, I generally have given the iodine of potassium, or the cider and elder preparation before mentioned.

In this, as in all other forms of dropsy, the condition of the skin should receive special attention. Frequent bathing, either with cold water, or whisky and warm broke water, twice a day, followed in either case by brisk friction, should be perseveringly pursued, while the side affected should be nearly covered with a large irritating plaster, to be worn until a free discharge is produced. This should be worn as long as it can be borne, when it should be removed, and the side dressed with simple cerate until it ceases to discharge; a fresh plaster should then be applied. But when every measure that experience can suggest has failed to afford relief, resort may be had to paracentesis.

The diet, in these cases, should be simple and digestible, always having reference to the ability to digest, and the condition of the system. If the case is one of debility, and an impoverished condition of the blood, the food should be nourishing and free, as much so as the stomach can digest without requiring too much expenditure of the vital powers.

HYDROPERICARDIUM, OR DROPSY OF THE HEART.

It is only for the purpose of a clear diagnosis of this form of

dropsy that I feel called upon to notice it. It is strictly comprehended in the term hydrothorax, that term signifying water in the chest, and for all practical considerations, except barely for the purpose of correctly apprehending the difficulty, might be allowed to pass in that connection. As in the cavity of the pleura a small amount of fluid always exists as a natural effusion, so there is always a small quantity in the pericardium, and this is frequently augmented from cadaveric change, or from previous accumulation without any inconvenience. It is, therefore, in such cases, only a manifest embarrassment from the effusion that can call for special consideration. It may be difficult to determine what amount may be tolerated without inconvenience, but frequent observation has clearly shown that from a drachm to two ounces, and perhaps more, may be contained without any embarrassment.

Symptoms.—There are, perhaps, no well-defined symptoms, produced by accumulation in the pericardium, that are not more or less associated with other affections of the heart; we must, therefore, depend upon the whole presentment of the case. We must not merely rely upon the symptoms of dropsy in general; for hydropericardium is frequently associated with other dropsical affections. Nor will it answer to depend upon the inability to retain the recumbent posture, a small irregular pulse and dyspnœa, purple lips and imperfect aeration of the blood, as these symptoms often coexist with other affections of the heart. Nor yet will an extended dullness over a considerably larger space than is natural suffice, as the same symptoms grow out of hypertrophy of the heart.

But when we find, along with this extended dullness on percussion, and that somewhat changeable, as shown by careful examination at different times—an irritable, irregular but small pulse, occasional dyspnœa, and inability to take the horizontal position, with or without a prominence in the region of the heart, more or less œdema of the face or other parts, a diminished urinary secretion, and other symptoms of a dropsical effusion—taking all these together, we may reasonably conclude the case to be one of pericardial dropsy. This conclusion will be greatly strengthened by the early symptoms in the case. If the evidences of pericarditis, either in the acute or chronic form, have previously existed, followed shortly afterward by the symptoms already enumerated, the existence of effusion may be very safely concluded, though in such cases the effusion is generally fibrinous, and may be found decidedly colored by sanguineous percolation. This is, probably, most com-

monly the character of the effusion in hydropericarditis, though it may occur under different circumstances, and the fluid present the usual appearances of serous predominance, as in ascites, and hydrocele. The amount differs in different cases, as in other forms of dropsy; in some, being inconsiderable, while in others, the quantity said to have been found is almost incredible.

What has been said, in discussing hydrothorax proper, on the subject of the *cause* and *treatment*, will apply equally well to hydropericardium, and I will, therefore, pursue the subject no further.

ASCITES, OR ABDOMINAL DROPSY.

Ascites, as now generally understood, is an effusion into the peritoneal sac, and is one of the most common forms of dropsy. In this term those encysted dropsical tumors occasionally met with are not comprehended, although, with the exception of those cases of hydatids which are most frequently found connected with ovarian disease, and seem to consist of spontaneous and almost inorganic growths from the ovaria, they might, with great propriety, be considered in this relation, as, in so far as they are dropsical affections, they occur under similar circumstances with ascites, and require the same treatment. I will however reserve a few remarks for ovarian dropsy proper, and will at present proceed to consider ascites.

Symptoms.—This affection generally makes its approach very gradually; often without any marked evidences of local disorder. But most generally it follows protracted fevers which involve the abdominal viscera, or attacks of peritoneal inflammation supervening upon child-birth. It occasionally takes place after other protracted cases of disease which produce general disturbance, and especially cause a deterioration of the blood. It will usually be first observed by a slight fullness, accompanied with some uneasiness in the lower part of the abdomen, which, if carefully examined, will be found slightly tender upon pressure. It gradually increases, and often to an immense extent, producing a projection of the abdominal parietes almost to bursting, displacing the liver and spleen, and greatly compressing, and often embarrassing, the other viscera. Watery accumulations in the abdomen will be readily recognized, after a little experience, by the wave-like motion communicated to one hand, placed flat upon one side of the tumor, from gently tapping the opposite side with the other hand. A more satisfactory process is, to place the hands upon the opposite sides, in close contact with the abdomen, and by a sudden pressure,

first with the fingers of one hand, and then with the fingers of the other hand, the sensible fluctuation or wavy motion will be recognized. We are told, indeed, by respectable authorities that, where the quantity of water is small, the fluid can not be thus felt; but I have never experienced any difficulty in this respect when the examination is properly made, and care is taken, in alternating the movement of the opposite fingers, to allow the hand, that is to receive the impulse, barely to touch the surface, so that the sensitiveness of the nervous extremities shall not be lost by too great pressure. But if there should be any difficulty in this respect, the sound emitted by percussion will generally afford additional satisfaction. This sound is more dull and flat than is afforded under other circumstances; in fact, the very outlines of the accumulation can generally be determined in this way.

The general symptoms of dropsy will usually be found as prominent in ascites as in any other form of the disease, often, in fact, preceding the local symptoms. There is an anæmic condition of the blood, as shown in the whole aspect of the individual, and usually a dry skin and some thirst. The urine is almost universally scanty, the skin dry and parched, if not warm, and generally more or less of emaciation. During the progress of the case, the extremities often become œdematous, though, occasionally, cases are met with without any anasarcaous swelling in any stage. The bowels are generally costive, produced in part by the pressure of the abdominal tumor. The pressure also upon the ascending veins produces a general, venous engorgement, favorable, alike, to the increase of the accumulation, and swelling of the veins below. The pressure, when the accumulation becomes extensive, frequently disturbs the stomach and bowels, producing nausea and colic pains, with a sense of weight and uneasiness in the abdomen. In some cases the general health appears to suffer but little, the individual being sprightly and appearing quite well. But most commonly, the general health has greatly failed, before the local difficulty is manifested, which is a mere symptom in the progress of diseased action; or, if the general decline has not long, or particularly preceded the local difficulty, the embarrassment of the system is soon shown by the pale and exhausted appearance, and the weakened and often palpitating action of the heart, which, with the increasing tumefaction, often present a scene of distress for sympathizing kindred and friends greatly to bewail.

Dissection shows what might naturally be expected, viz: eviden-

ces of previously existing disease, either in the form of some adhesions, or, more commonly, indurations; while the inner surface of the peritoneal sac exhibits a bleached appearance, as though it had been macerated in warm water. The fluid, as in other cases, presents the varied characteristics of such effusions—sometimes being of a pale straw color, and at others more limpid and transparent; while, if it has followed closely upon an attack of peritonitis, the exudation will present a darker or partially sanguineous appearance, with flocculi of albumen, or fibro-albuminous flakes in it. The quantity also varies from quite a small amount to a number of bucketfuls. I have myself drawn off three medium-sized bucketfuls at one time.

Diagnosis.—Ascites is liable to be confounded with, or mistaken for, pregnancy, tympanitis, disease of the ovaries, and other abdominal tumors. From pregnancy it will readily be distinguished by percussion, and the absence of fluctuation. The drummy and elastic resonance, with the absence of fluctuation in tympanitis, will render the distinction not very difficult nor uncertain. The history of the case, and the position of the tumor, both in ovarian affections and in case of the distended bladder, will afford a sufficient guarantee for the correctness of the diagnosis. When pregnancy is complicated with ascites, it may be difficult to determine the precise state of the facts; but, by careful examination, the fluctuation should be readily ascertained, and, generally, but little difficulty should be experienced in feeling the hardened, irregular contents of the uterus. If, however, this should not prove satisfactory, a per vaginum examination will decide the question with considerable certainty. In cases of excessive accumulations of fluid in the cavity of the uterus, presenting the characteristic fluctuation of ascites, by careful compression in various directions, moving as much as possible the tumefied accumulation, you will rarely fail to find the irregular prominences peculiar to such a condition. It is sometimes difficult to clearly define, if not to detect, the extent of the complications of indurated, tumefied organs, occasionally existing prior, or subsequent, to the occurrence of water in the abdomen. By continuous pressure at a single point over the region of the organ suspected of disease, the fluid will generally be displaced, so as to enable you to arrive at a reasonable conclusion in regard to the character and extent of the disorder.

Causes.—What has already been said in regard to the causes of dropsy mostly applies to ascites, and, therefore, little can be added

on the subject. The more frequent occurrence of ascites would suggest, perhaps, that some influences were operative in its production that are not related to dropsical affections in general. And if associated diseases are to be considered as among the causes of the affection, ascites would, no doubt, claim special attention in that respect. For it can scarcely be doubted that the morbid influences so often resulting either from the treatment or the natural tendencies of the fevers of this country, produce more disease in the abdominal viscera than is found in connection with the organs of other parts of the body, and thus, by the obstruction necessarily produced, by disease of these organs, in the great venous circulation, the precise condition favorable to the occurrence of ascites is developed. In this way, both acute and chronic affections of the liver, by giving rise to venous congestion in the portal circulation, may act as a cause of abdominal dropsy. The same may be said of the other organs of the abdominal viscera. But disease of the mesenteric glands more especially acts as the immediate cause of ascites, because the production is dependent, in those glands, of tuberculous deposits, upon a condition of the blood similar to that which is necessary to develop dropsy in the abdomen. Whatever organ may contribute to the production of ascites, a condition of the blood, as well as of the general system, favorable to the accumulation of serous effusions, will most generally, if not universally, be found previously existing; and, in fact, this condition of the system may play an important part in producing an abnormal state of the organs which, thus diseased, contribute to the development of dropsy.

Prognosis.—Recent cases of ascites, if not connected with incurable structural disease of an important organ, can generally be cured. And even in the advanced stage, if the stamina of the system is not greatly impaired by previously existing disease, and the patient is in a condition to tolerate efficient and pretty thorough medication, many cases of the effusion can be removed. Those cases which appear after an attack of peritoneal inflammation, without other serious organic disease, and unconnected with a general dropsical habit, will mostly yield quite promptly to appropriate treatment. But it can not be denied that many cases are met with which from their complications or other circumstances, can not, in the present state of our knowledge, be cured. The disease sometimes continues for years, after repeated tapplings, and, in some rare instances, is then removed; but most generally this operation

affords merely temporary relief, the disease shortly returning and going on again, until the force of the system is exhausted, and it finally sinks from sheer weakness, or by a sudden metastasis to the heart or brain.

Treatment.—The indications for treatment of dropsy of the abdomen are essentially the same as those presented in hydrothorax, and with slight variations, the same remedies, used and applied in a similar way, will be found equally applicable in the former and latter. The only modification required will be in those cases where the disease is complicated with affections of the liver and spleen, and some others of the abdominal viscera. In addition to the various preparations prescribed for hydrothorax, I would recommend the compound taraxacum pill, which I have heretofore frequently directed, for inactivity of the liver. One or two of these pills should be given every day, and will be found to answer as a substitute, at least, for the sirup of apocynum, when that preparation is not at hand; though, generally, the sirup will be an efficient cholagogue aperient, as well as diuretic. But when the bowels are irritable, with dyspeptic symptoms, the tongue presenting a red or smooth appearance, with epigastric tenderness, and the common remedies can not be borne, a pill prepared from the alcoholic extracts of dandelion, elder, and Indian hemp (*apocynum canad.*), in about two parts each of the first two, and one of the latter, and worked up with pulverized licorice, will be found a valuable preparation. If an irritable pulse is observed, a grain of digitalis may be added to each pill, and one given twice or three times a day. But when they can be borne, an occasional hydragogue cathartic of compound powder of senna and jalap with cream of tartar, and the daily use of the sirup of apocynum and podophyllum, together with the iodide of potassium or the elder and cider decoction, will be found the most efficient and reliable internal remedies that can be used. In some of the cases presenting a pale and bloodless aspect, I have frequently prescribed an off-hand preparation, made by putting a handful of clean rusty nails into the cider and elder decoction while that was preparing, adding thereby acetate of iron to the diuretic mixture, which appeared to have a beneficial effect.

But whatever internal remedies may be thought most appropriate, the application of the irritating plaster nearly over the entire abdomen, by which is kept up a free discharge from the whole surface over the peritoneal sac containing the effused fluid, will be found a most important adjuvant, and one that should never be

neglected while the other means are being pursued. It is not sufficient to use one efficient curative measure after another, in detail, but all the efficient means should be employed simultaneously. Nor should it be overlooked that, in most of these dropsical affections, we have most intractable and wayward forms of disease to encounter, and therefore our most efficient and reliable forces and measures should be marshaled in simultaneous array, until the last vestige of the affection is removed.

The bathing and diet, before recommended, should be made use of in ascites; and when the abdominal fullness diminishes, it has often seemed to me greatly to hasten the cure by following up the declining tumefaction with a bandage.

When all our most reliable measures, and our best-directed efforts, fail to answer our expectations, and the disease goes on uninterruptedly until the accumulation can no longer be borne, I have occasionally resorted to tapping, as the only means within our reach for procrastinating the fearful period. It is not, however, in *all* cases that a *merely* temporary relief is afforded by tapping; as, by removing the pressure from the abdominal viscera, and especially from the kidneys and the great venous canal, a new effort is induced, and nature, flushed with the apparent ascendancy that has been acquired, rallies afresh her transcendent powers, changes the tide of effusion, returns the serous accumulation to the circulation whence it came, and thence through the great natural emunctories, the skin, kidneys, and bowels, eliminates it from the system. It is generally a very simple operation, fraught with very little danger, though in greatly contaminated systems peritoneal inflammation might be thereby superinduced and prove fatal. The common method of performing the operation is with a trocar and canula; but I have found it more easily performed with a common lancet, immediately introducing a silver tube, with a button-like head soldered on to one end of it to prevent the tube from passing in, and so arranged as to allow the fluid to pass out through it. The advantages of this method over that with the trocar and canula are, that it is performed with ease to the patient, and does not by bruising the parts, produce a liability to inflammation. Whatever method may be preferred, it is always necessary to follow up the retreating abdomen with a bandage, to supply, to some extent, the loss of the pressure which has so long been made upon the bowels and vessels, and for the want of which fatal syncope has been known to follow.

Permanent relief is said to have been afforded by injecting stimulants into the peritoneal sac, after evacuating the fluid, thus bringing on a slight peritoneal inflammation, by which the sac becomes obliterated, and the further effusion prevented. But it is an undetermined question whether it can be safely performed, and, therefore, I do not recommend it. I do not, however, apprehend the same danger that is generally attached to it, and if a favorable opportunity offered, I should, with the proper qualification, advise the patient to allow it, at least as the last hope. The same thing is frequently done in scrotal dropsy to reflections of the same membrane—only that they occupy a less extent—with entire impunity, and generally with complete success.

OVARIAN DROPSY.

The personal observations, which I have made, in treating two or three well-marked cases of ovarian dropsy, have forcibly impressed my mind with the conviction that the *description*, which has been given by some modern authors of this affection, is not entirely correct. In two instances, to which I more particularly refer, I found an even and uniform tumefaction having all the characteristics of ovarian dropsy, a sensible fluctuation, of the size of a child's head, occupying the space above the groin. The approach had been gradual, and the increase continuous from a small tumor, imperfectly recognized up to the size indicated. The tumor presented a uniform and rounded character, with a fluctuation that was unmistakable. The time of life at which they occurred, the striking characteristics which they presented, and the attendant symptoms, left no doubt on my mind that they were cases of ovarian dropsy in the proper acceptation of the term. The fluid must have been contained in the peritoneal folds surrounding the proper substance of the ovary. The urine, in these cases, was scanty, and the skin dry and husky. In both cases, by pursuing the treatment I have recommended for ascites, especially the sirup of apocynum and podophyllum, and the iodide of potassium, internally, and the continuous discharge from an irritating plaster immediately over the tumor, the patients recovered.

Encysted tumors, or more properly, according to my apprehension of the difficulty, hydatids of the ovaries, which seem to me to answer so well Dr. Wood's description of ovarian dropsy, are not properly included in the term dropsy. These tumors appear to be transformed *Graafian* vesicles, and have the character of a low

grade of organized growths or watery cysts, of an irregular or lobulated shape. They often attain enormous dimensions, but contain a small amount of fluid compared with their size. They present an uneven and irregular feel, when examined through the abdominal parietes, and but an imperfect fluctuation, or, at least, more of the true or solid tumefaction than the proper sacculated dropsical effusions. It is true that, in some respects, they have the character of genuine dropsical accumulations, as in the last stage, it is said, the feet and legs often present an œdematous appearance. But it should be remembered that tumors of the size of these ovarian growths would press upon the large ascending vessels so as to be followed, in any event, by œdema of the extremities. This is also greatly favored by the state of the general health that accompanies these cases. A perfect parallel is found in the œdematous swelling that often accompanies the last stage of pregnancy, and which generally disappears with great rapidity when the pressure is removed.

The views I have here expressed are forcibly sustained by the fact that these encysted tumors rarely, if ever, have the constitutional symptoms, along with the local growth, of a dropsical character. The history of the cases successfully treated shows that they were of the genuine dropsical character, and not the encysted and irregular tumors described by Dr. Wood; while the treatment of those cases clearly of ovarian growth shows, beyond doubt, that they had not the character of dropsy, and were, therefore, never amenable to the treatment generally found successful in dropsy.

ANASARCA.

This term is used to indicate a serous accumulation in the cellular membrane of the exterior of the body, whether it is confined to the lower extremities, or extends over the whole system; though a slight circumscribed swelling or infiltration of the kind is termed œdema. Œdematous swelling of the extremities in anasarca is, however, a common expression.

Symptoms.—This form of dropsy may be an *independent* and mere local affection, produced by local causes, or it may occur in *connection with other forms of the disease*, or result from the predisposition of the general system to serous exhalation. Whatever may be its association, anasarca mostly comes on gradually, and shows itself, at first, by a slight swelling of the feet or ankles at night, or upon long standing, which, in the beginning, generally

disappears upon remaining in the recumbent position for a few hours. It may be distinguished from the swellings produced by lymphatic inflammation, and from other elastic and puffy enlargements, by the indentation in the flesh upon pressure which does not readily disappear, or *pitting* as it is called. Whether it is constitutional, arising from a general dropsical diathesis, or a mere local affection, arising from pressure upon some of the venous radicals, such as occurs in the last stage of gestation, the arrangement of the cellular structure of the system is such as to render a communication between the individual cells so direct as to admit of free circulation of the effused fluid from one part of the system to another upon change of position. Hence the erect posture long continued produces in dropsical subjects swelling of the feet and lower extremities, while a recumbent position is followed mainly or in part by its disappearance. In systems in which a general dropsical tendency exists, the swelling may first appear in the feet and ankles, or it may be first manifested by slight œdema of the face or even of the eyelids, and gradually extend.

When it commences in the feet it gradually increases and extends up the limbs, though partially disappearing at night, until by slow encroachment it extends to the body, and at length over the whole system. It is not, however, alike over all parts of the body, but shows itself more distinctly in parts where the cellular membrane is the most loose, in which its appearance is more full and bloated, and often forms, in some parts, such as the prepuce of males and the labia of females, pendulous sacs distinct from the adjacent parts. The œdema in the limbs differs greatly in different cases. In some the accumulation is so great as to present the appearance of large rolls of flesh on the limbs, the skin being tense and shiny; and upon the slightest abrasion, limpid serum will exude in considerable quantities and for a long time. In some cases the distention becomes so great as to rupture the cuticle, thus affording an outlet for the pent-up fluid; and I have witnessed an instance where the discharge was so profuse as to afford at length permanent relief.

In most cases the anasarca is found associated with dropsical effusions into some of the cavities, as the abdomen or chest, and then presents a more difficult and tedious form of the disease to treat. Yet it is occasionally confined to the cellular membrane under the skin, where it continues to accumulate until the patient is harassed by the irritation attendant upon it, and finally becomes

exhausted and sinks; or, by a sudden transposition, the fluid falls upon an important organ, overpowers its vital force, and the patient dies from the embarrassment of the organ involved.

The affection under consideration often occurs under circumstances that give to it very much the character of an inflammatory disease. Such are the cases that result from cold following scarlet fever, measles, and the like affections; or it may present the characteristic phenomena of a purely adynamic affection, resulting from insufficient food, or following in the wake of protracted disorder of another kind. In the first case, it will be associated with hot skin and a general febrile action, and the swelling exhibits a hard and elastic character; while in the latter, the symptoms are, general weakness, cool skin, and a very dead, inelastic and doughy feel of the swelling.

When it comes on suddenly, it will usually be found to present the character of the fibrinous dropsy already described; but in the more slow or gradual forms it has the character of the serous modification.

Diagnosis.—The only affections, or symptoms of other diseases, with which anasarca is liable to be confounded are the puffy swellings, sometimes occurring in rheumatic affections of an insidious character and attended by scarcely any febrile or constitutional symptoms, and the swelling produced by the effects of certain poisons upon the system. But it will be distinguished from all those symptoms by the absence, in them, of the inelasticity, or *pitting* peculiarity, which always characterizes anasarcaous swellings.

Post-mortem examinations show that the effused serous fluid is not confined to the cellular structure immediately under the skin, but often extends deep into the cellular structure between the muscles, softening their structure, and producing a condition favorable to rapid decomposition after death.

Causes.—Any of those influences heretofore described when treating of dropsies in general, are capable of producing anasarca. In its uncomplicated character, it is most frequently produced by colds occurring after some of the exanthematous diseases; or it may result from local causes operating upon the venous trunks, as in pregnancy. It is often a mere symptom attendant upon other diseases, and subsides when the original affection is cured, or continues until the case proves fatal. It may be of a general character, resulting from the general dropsical tendency or predominance of serous accumulation in the blood.

Treatment.—From what has been said, it is apparent that no general course will be reliable in the treatment of this affection. When it follows the eruptive diseases, from a sudden cold, a thorough sweat should be produced by free draughts of warm, diluent, diuretic decoctions, as that of mullein leaves or parsley, aided by hot bricks wrapped in moist cloths, and continued for a number of hours. In these cases it will not answer to administer active hydragogue cathartics as in other cases. And if the copious sweat and diuretic teas referred to are not sufficient to relieve the case, then the patient may be put upon a more general course of treatment. In such cases he may be allowed to take a wine-glassful, three or four times a day, of the cider and elder infusion before referred to, prepared by steeping half a pound of the fresh bark of common elder in two quarts of hard cider. Or the cream of tartar and rock candy may be given as before directed, page 543, while the most thorough course of general bathing should be instituted. It may be done in cold, tepid, or warm water, as best suits the habits and condition of the patient. The diet in these cases should be light and mostly farinaceous, and the patient should be directed to take a moderate amount of exercise in the open air. But should the case prove obstinate, in addition to these measures the patient should be directed to take, three times a day, eight grains of the iodide of potassa, and a gill of the decoction of the *asclepias syriaca*. If the œdema exists in the scrotum, warm fomentations may be applied with decided advantage.

For cases of anasarca of the lower extremities, which are often attendant upon the last stage of pregnancy, little more will be required than to keep the bowels free by the use of the cream of tartar and rock candy, and to bandage the limbs with a flannel roller every morning, when the serous effusion has been partially diffused by the recumbent position. This may be pursued until after confinement, when the removal of the pressure from the embarrassed veins seems to act as a suction hose, and the fluid is thrown off as by the engine of water-works. I have witnessed the most astonishing results of this kind in the amount discharged. Where the extremities had been swollen almost to bursting, and the œdema extended to the hips, involving, in a few cases, the labia pudendi to a complete deformity, I have seen the whole disappear in forty-eight hours, while the discharge from the bladder amounted to a number of gallons in the same period, thus exhibiting the very ample resources of the system for throwing off disease when

the cause of the difficulty is removed, and thus admonishing the physician to look well to the cause, and then endeavor to imitate the process of nature in his efforts to remove the disease.

But those cases of anasarca, whether confined to the lower extremities, or involving the whole cellular membrane, which grow out of the state of the blood and the condition of the system at large, will often require a more vigorous course, combined with general restorative measures. These cases, though connected with debility, will generally be benefited by administering once a week, or once in two weeks, a pretty free hydragogue cathartic. Few, if any, remedies equal, for this purpose, the compound powder of senna and jalap with cream of tartar. It is thorough in its operation, and yet sufficiently mild. It may be given in drachm doses of the former, and two drachms of the latter, in half a teacupful of cold sweetened water. Meantime the patient may be taking sufficient of the gin bitters (*compound tincture of tamarac*) to keep up a regular action of the bowels. This preparation I have before adverted to as fulfilling more indications than any other compound in our pharmacy. Its special action, however, is directed to the kidneys, increasing their secretion, and to the skin, inducing a more free perspiration; at the same time, few remedies promote, with more uniform certainty, the healthy action of the digestive organs, and thus largely contribute to general restoration. If it is not found to act with sufficient energy upon the urinary secretion, the acetate of potash may be given in ten-grain doses, three times a day, or a decoction of peach and mullein leaves may be made, and taken in wineglassful doses three times in twenty-four hours. Or the iodide of potassium may be given for the same purpose as before directed.

The condition of the skin should be particularly attended to by frequent bathing followed by friction, and when the extremities become inflamed, as in some cases of anasarca produced by intemperance, they should be bandaged with a towel wet in cold water, and renewed once in three or four hours, and a roller applied with moderate tightness, while the patient is directed to be quiet, and keep up the feet. The diet in these cases should be liberal and substantial, but in all cases governed by the demand and the ability to digest what the stomach willingly receives. The amount of exercise should also be governed by the ability to bear without fatigue, always recollecting that over-exertion is alike injurious to the general system and the local affection.

LECTURE LXXIV.

LOCAL DISEASES—CONTINUED.

Cutaneous Diseases: General remarks. Vesicular Diseases: Species. Herpes: Characteristic Symptoms; Varieties; Causes; Treatment. Eczema: Varieties described; Cause; Treatment. Scabies or Itch: Nature and Symptoms; Causes; Treatment. Bullæ; Two Modifications; Pemphigus; Description; Treatment;—Rupia; Description; Causes; Treatment. Pustulæ: Varieties; Impetigo, or Moist Tetter; Character; Causes; Treatment;—Por-rigo or Scald-Head; Description; Causes; Nature; Treatment. Ecanthematæ: Varieties; Erythema; Description; Diagnosis; Causes; Treatment.

CUTANEOUS DISEASES.

In considering the skin diseases, I do not propose to go into a minute description of every variety of these affections as discussed in the general authorities, but shall content myself by presenting some of the most common and prominent of the several groups or genera of this class, as comprehending all that can be discussed on the present occasion with any practical utility. I am the better satisfied with this course since the character of the several varieties will be very well understood from the individual diseases I shall consider, and especially as the course of treatment necessary and proper for the individual cases will generally be applicable to the others of the same order. But I must be permitted to say that, with all the investigations that have been made in this class of diseases by very learned authors, but little of a very satisfactory nature, in a practical point of view, has yet been learned. It is true the history and symptoms of the various cutaneous affections have been carefully studied and described; but when their true nature and character are sought to be learned, when the relation they bear to the condition of the blood and system in general is sought to be explained, it must be confessed we are greatly in the dark, and must call for further light on the subject.

I shall comprehend all I have to say on the subject of skin affections in the following general orders of families, viz: the vesicular, bullæ, pustules, rashes, pimples, and squamæ or scaly diseases, and shall take them up in the order stated.

VESICULAR DISEASES.

The vesicular genus is characterized by small pimple-like elevations of the cuticle, filled with a serous fluid of a clear and transparent character at first, but generally becoming more or less opaque, and of a purulent character, which usually terminates in a scaly crust. In this division are included different species, as *herpes*, *eczema*, or *milk-crust*, *scabies* or *itch*, and some others.

HERPES, TETTER, OR SALT RHEUM.

This is a non-infectious disease of the skin, characterized by small vesicles, differing somewhat in size, but grouped together upon a circumscribed inflamed portion. The vesicles are at first filled with a transparent fluid, which shortly becomes opaque. This matter disappears either by absorption or evaporation through the cuticle, and the eruptions appear thereby to die, and form thin scales on the parts, or they burst and diffuse their contents upon the skin, forming yellowish crusts. These scales or crusts at length fall off or are removed, leaving the inflamed skin to form new vesicles, and then again a new set of scales or crusts, and so on. These herpetic patches occur at different points, and often in distinct patches, with intervening healthy skin, and sometimes occupy a large extent of surface. But they are more frequently circumscribed, and confined to a small space. Herpes is rarely accompanied by much general disturbance or febrile symptoms. It presents a greatly diversified character, not only in its appearance and duration, but especially in reference to its connection with the general system. In some cases it appears in small patches, continues a short time, and then disappears; while in others it is clearly a constitutional disease, not only returning every season upon the return of cold weather, but being transmitted to descendants for a number of generations. The books describe a number of varieties of herpetic eruptions, differing mainly in the form of the conglomerations and location of the eruption. Thus the *herpes circinatus* or ringworm, the *herpes iris* or rainbow ringworm, *herpes zoster* or shingles, and the *herpes phlyctænodes*, differ but little in their essential character, except in the extent of constitutional derangement, which is greater in some cases than others. It can scarcely be doubted that herpes, whether it occurs in the form of a ringworm, or in a more general form appearing at no particular place, but changing from one part to another, is a constitutional disease.

Herpes zoster, or shingles, is the most severe form, being generally accompanied by more acute symptoms of constitutional derangement and general disturbance, such as furred tongue, deranged secretions, generally some fever, preceded by chills and often accompanied by severe local pain of a deep-seated, neuralgic character, and a severe burning and smarting sensation on the surface. The eruption occurs generally on the chest, and frequently extends in a narrow ring round the body, which tradition considers very ominous of a fatal termination, an opinion which has nothing but traditional error to support it. It begins generally with a very red patch, but soon becomes covered with transparent vesicles, and then pursues the course previously described. Herpes is liable to be confounded only with some modification of eczema, but the distinction will be readily determined, upon very little experience. The vesicles in herpes are generally larger and more round, at first very minute, but gradually increasing, and continuing for some time; while in eczema the vesicles are smaller, seldom last but a few days, and have not so distinct an inflamed base.

Causes.—Very little can be said in regard to the cause of this form of eruptive disease, more than has already been intimated. Various influences contribute to develop herpetic eruptions, such as derangement of the stomach and bowels, excessive fatigue, exposure to cold, and other depressing causes; but I greatly doubt whether it ever occurs without some previous abnormal disturbance in the condition of the blood. That it is frequently hereditary, I have had too many well-defined cases occurring in children whose parents were affected with the same form of the disease, to render it a matter of doubt.

Treatment.—In accordance with my views of the disease, I have always prescribed constitutional treatment, and with uniformly satisfactory results. In the more acute form, and especially for herpes zoster, I have generally prescribed a moderate course of cathartics, repeated once in two or three days. The compound powder of senna and jalap, with cream of tartar and sulphur, is a favorite medicine in such cases; though if any evidences of hepatic torpor existed, the podophyllin and taraxacum pill should be given, one every night for a short time. But the main reliance is upon those measures calculated to operate more directly upon the blood. I have mostly relied on a decoction of bitter-sweet (*solanum dulcamara*), taken in wineglassful doses three times a day.

It may be prepared by making a quart of the decoction from an ounce of the bark of the root. An ointment may also be prepared from the tincture of the same bark, and applied to the parts affected. You will seldom be disappointed in effecting a cure with this remedy, except in those more obstinate hereditary cases of long standing, where you may be prepared for frequent disappointments with any course I have ever seen pursued. But I have, for the last few years, been occasionally in the habit of using in these cases the sirup of stillingia and the iodide of potassium, and have seen very good effects from them.

ECZEMA, MILK CRUST, OR HUMID TETTER.

This form of eruptions is characterized by many fine and conglomerated vesicles, filled at first with a transparent serous fluid, which soon becomes opaque or milky, and at length dries by absorption or evaporation, and forms a yellowish crust. There are a number of modifications of this eruption, but in many respects they might be considered as one disease, and no doubt they are dependent on a similar condition of the system. The three leading varieties are *eczema simplex*, or prickly heat, *eczema rubrum*, and *eczema impetiginoides*.

The first or *simple* variety is that eruption on the skin, most common to children, but frequently occurring in fleshy adults, during the warm weather of summer. This variety does not always vesicate to any great extent, though in some instances it commences like prickly heat, shortly assumes a more distinct vesicular character, and then dries. The second variety, or *eczema rubrum*, presents a more distinct vesicular character, surrounded by a more distinctly defined "red base," with an inflamed skin, presenting a rough and sometimes swollen aspect. This form is accompanied by a sense of itching, and after the vesicle dries and scales off, the skin presents an inflamed appearance, which is followed by a new set of vesicles, which in their turn dry and desquamate; or, after the first scaling off, it may get well. The third variety, or *eczema impetiginoides*, is simply a more aggravated and severe form of the last, with greater swelling, heat, and itching, more numerous and enlarged vesicles, forming more thick and dense scales, and in some instances presenting interspersed pustulous eruptions. In the desquamation, too, it presents a severer character, leaving the skin in a raw and inflamed condition, and followed by a new crop of pustules, which in their turn desiccate and fall off; and thus it

continues if it does not get well. This form is usually circumscribed in its extent, sometimes being confined to one cheek or the head, though it generally shows itself in patches over different parts of the body. It is no unusual occurrence for extensive attacks of this kind to be accompanied by constitutional disturbance, fever, and restlessness. The three modifications will often be witnessed in this more severe modification, thus most conclusively showing their identity. This is often exemplified by the milk-crust, or scald-head, as it is sometimes called, of nursing children. On one cheek the eruption will be seen in its most aggravated form, presenting one continuous scale, with an inflamed areola; while on the other cheek may be seen the dry and scaly surface of the most simple form. It sometimes affects the hands and feet, and sometimes various parts of the limbs; and then again is confined to the face or head. The itching seems to come on in paroxysms, often with great severity, producing the most uncontrollable propensity to scratch, which is frequently indulged by the child at the expense of very extensive sores and bloody fingers. These cases frequently become troublesome and obstinate to cure.

Cause.—The condition of the blood, it can scarcely be doubted, is involved in the causative origin of this disease. But in what the derangement consists we are not prepared at present to say. I have mostly observed that those children who are troubled with this affection either have scrofulous parents, or their mothers were affected with herpes. It occurs oftener in the changeable season of spring and early summer than at other seasons, though it may occur late in the season. It may, no doubt, be excited in systems strongly predisposed by any causes calculated to produce irritation.

Treatment.—Some of these cases of milk-crust or eczema will prove troublesome and tedious under any treatment that I have ever witnessed. Time, however, will relieve them, as the system is developed, and more active exercise in the open air is taken, by which a change is effected that medicine alone would be slow to produce. It rarely continues long after weaning, though whether the mother's milk has any influence in perpetuating it might be questioned, since other simultaneous changes are developed that no doubt contribute to the cure. But accompanying these cases will generally be vitiated secretions in the bowels that no doubt tend to aggravate, if they are not essential to the continuance of the disease. It is, therefore, important in all these cases to administer medicines calculated to restore a more healthy action in the

glands of the bowels, and remove any acid or morbid accumulation that may have taken place. A pill of taraxacum and podophyllin will rarely fail to excite a more natural action in the secretions of the liver and other chylopoietic glands. But to remove the existing accumulations and correct any acid secretions which are liable to complicate these cases, the neutralizing physic (compound powder of rhubarb) is, without doubt, the best preparation that can be used. It may be given at first, till it operates freely, as a cathartic, and afterward in smaller portions to act merely as a corrective. Half an ounce of the compound powder being decocted in a pint of water, and, after straining, a small quantity of loaf-sugar being added, it may be given in tablespoonful doses once in two hours to a child nine months old, till it operates, and may afterward be continued in dessertspoonful doses three times a day. Meantime a decoction of the solanum dulcamara should be given in about the same sized dose.

Various preparations have been recommended for local application in this affection, and I have used, at different times, quite a number of them. The two most efficacious in my hands are, the wild indigo (*baptisia tinctoria*) or the yellow ointment, to which hydrastis may be added and the tar ointment of U. S. D. To be of much service, it is necessary that the parts affected should be kept constantly covered with the ointment. But they will rarely fail, especially the tar ointment, to afford comfort to the patient by preventing that intolerable itching that is characteristic of the disease. In addition to the internal remedies already recommended, I have, in one or two cases that had resisted every other remedy which experience could suggest, obtained entire relief from the use of the tincture of podophyllum, taken internally in sufficient doses to act moderately on the bowels, and applied three times a day as a wash directly to the seat of the disease. The internal dose will vary according to the age of the patient from twenty drops to a teaspoonful. In my early practice, I was frequently in the habit of using Fowler's solution of arsenic in doses of from one to five drops twice a day, and, I had no doubt, with advantage.

SCABIES, OR ITCH.

Nature and Symptoms.—The itch is a specific infection propagated by immediate contact. It is now fully settled that this affection is caused entirely by a species of animal known as the *acarus scabiei*, or *sarcoptes hominis*. It is a very minute, white insect, present-

ing a mere point to the naked-eye, but when magnified is found to be of an oval shape, with rough transverse stria, having slight mammillary projections between them. It has no proper head, but on the caput extremity has a kind of proboscis or mandibular organ of a roundish, but slightly compressed form, which is furnished with ciliary processes or bristles. It has what appear to be eight feet, four on each side. The acarus has the ability to make channels under the cuticle, and thus pass from one point to another in the rete of the skin. It is not usually found in the vesicle, but as soon as that begins to form from the irritation that the acarus has produced, it moves forward to another point, and thus continues to extend its depredations and leave its marks. It generally deposits its eggs at the point of vesication, which appears to form a nidus for their development.

The *character of the eruption* in scabies need scarcely be described. Suffice it to say that it is most commonly seen first between the fingers, on the back side of the hands, and thence spreads over other parts of the body, appearing to prefer in all its migrations the angles of the joints and other parts of the system where the skin is most soft and delicate. It begins with a slight irritation barely visible, but soon amounts to a distinct itching, and then will generally be seen a small vesicle, from which, on being opened, a single small drop of limpid, serous fluid exudes as from a sac. When the vesicle is ruptured the fluid inspissates and forms a yellowish, crystal-like scale. These eruptions are sometimes scattered, and only here and there to be observed between the fingers, on the wrists, etc.; but in other cases they increase to a larger number, and often, from being ruptured by the severe scratching which they induce, present a small heap of scaly substance, occupying considerable space. Thus they may be seen not only between the fingers, on the wrists, and arms, but they will be found in the angles of the legs, on the ankles, and on various other parts of the limbs and body. The acarus seems to have its periods of repose and action, if we may judge from the paroxysms of itching which characterize the disease. And though the immediate effect of the laceration of the skin is a temporary respite to the itching sensation, yet it always aggravates the irritation, and produces the sores that often accompany the case.

Cause.—Although many circumstances connected with the condition of the system may, and no doubt do, greatly contribute to the production of itch, yet the only immediate producing cause is

the insect referred to. It would seem that some peculiar constitutions are more subject to the disease than others, and also that dirt and want of cleanliness often aid much in the production of the disease.

Treatment.—Various experiments have been performed out of the system, upon the living animalcule that produces scabies, to determine what substances were destructive of it. By these tests it is shown that many medicinal substances would have this effect; but most of them are powerful, and not very safe to administer in such quantities as are required to destroy the animalcule. Universal experience, however, has shown that sulphur is not only safe in almost any condition of the system, but is also a certain and effective remedy. The method I have often pursued is to prepare an ointment of sulphur, lard, and spirits of turpentine, and direct the patient to be provided with a suitable night-dress, and just before going to bed, to give the skin a thorough anointing, especially in the angles of the limbs, and at every point where any of the eruption is felt or observed. In the morning the whole surface should be washed with soapsuds, and free doses of cream of tartar and sulphur, in equal parts, taken internally. The same course should be repeated three nights and mornings in succession, and will rarely fail to effect a cure. I have yet to meet the first case of failure under this regimen.

There are some objections to the use of sulphur, although it is a specific for the disease, that make it desirable to use other means, if such can be found. An iodine ointment, when properly applied, will generally succeed in arresting it, but will rarely be found as prompt and perfect. It must therefore, be more perseveringly applied, and continued for some time after the disease seems entirely removed. Spirits of turpentine, applied externally, and taken in five or six drop doses internally, has in many hands proved a very successful remedy, and one that is less objectionable than the iodine or sulphur. I have also applied the acetous tincture of sanguinaria with marked advantage.

BULLÆ, VIZ: PEMPHIGUS AND RUPIA.

There are but *two modifications* of this form of skin affections. They are characterized by the collection of sero-purulent, or sero-sanguineous fluid under the cuticle. They do not greatly differ from the vesicular family, except in the size of the blisters or blebs. They mostly have a circular form, and generally result in a scab

upon the evaporation of the fluid which they contain. The two modifications are called *Pemphigus* and *Rupia*.

PEMPHIGUS.—This affection presents itself both in the acute and chronic form. It is however a disease of rather rare occurrence, especially in its acute form. It is always connected with a vitiated condition of the blood, frequently following the use of oily substances in excess, or the free use of walnuts or other nuts that contain a large amount of oily matter. It is characterized by roundish blisters, varying in size from that of a three-cent piece to a quarter of a dollar, presenting at first a whitish blister, filled with a fluid nearly transparent, but soon becoming opaque and mattery, though rarely presenting the true characteristics of pus. The blebs however shortly dry, or if ruptured, evaporate and form a yellowish scale, followed frequently by a slightly ulcerated state of the parts under it, and having inflamed edges. It sometimes first appears in the form of an intense erythema, which soon forms a distinct blister filled with a more transparent serum. In this case a sore of considerable size is apt to follow. These erythematous patches sometimes appear in considerable numbers, having healthy and natural skin intervening. The eruption does not appear all at once, but in successive blisters, and hence you will find it in all stages, from a blister just forming, to an irritated surface after the scale has fallen off.

Treatment.—Connected as these cases are with decided derangement of the system, the first indication is to correct that abnormal state and thus remove the cause of the disease. For this purpose strict attention to diet and frequent bathing will be important measures to be pursued. All oily and fatty substances should be proscribed and the patient confined to a vegetable diet of a simple, and for a time farinaceous character. In the early stage a mild course of cooling physic should be instituted, not however to the extent of producing irritation of the bowels. Seidlitz powders, or cream of tartar and sulphur, or small doses of the white liquid physic, may be given every few days. For those cases of greatly contaminated systems, the compound sirups of sarsaparilla and of stillingia constitute as good alteratives as we now possess. But these measure should not be carried too far, or the system may become so much debilitated as to interfere with the eliminating process necessary to remove the cause. After having corrected the secretions and restored the digestive organs to a better condition, by moderate physic and appropriate diet, the system should

then be aided by mild tonics conjoined with the alteratives and a more liberal use of nourishing and digestible food.

It may be necessary in some stages of this affection, to make use of some local application that shall at least afford some degree of comfort. When there is much soreness and inflammation, the application of a soft slippery-elm poultice will soothe the irritation, ease the pain, and afford all the benefit that can be expected from any application of the kind. After the more inflammatory symptoms have been thus subdued and if it is both inconvenient and unnecessary to keep up the poultice, it may be left off and its place supplied with the black salve (*emplast. plumbi ox. rub.*), or the yellow ointment (*unguentum baptisæ*).

RUPIA.—I refer to this form merely to say that, if I understand what the books undertake to teach concerning it, it is only a modification of pemphigus, being merely an aggravated manifestation of the same disease, and occurring in systems previously diseased with some specific affection, such as scarlet fever, smallpox, etc. It is in fact the pemphigus eruption in a larger and more severe form, resulting from the vitiated condition of the blood produced by those affections or from the ill-fed and filthy condition of children. The authorities describe three varieties, but they have no natural distinction, further than what is dependent on the accidental condition of the system.

Causes.—The causes of this form of disease are believed to be a vitiated condition of the blood resulting from other affections, or from unwholesome and innutritious food, from long continued habits of intemperance, from unclean and filthy practices, or from neglect of personal cleanliness.

Treatment.—The treatment of this eruptive affection should be a moderately alterative and tonic course, with attention to the state of the skin, and the use of nourishing food. In fact, leaving out the cathartics, the treatment of rupia does not differ from that of pemphigus.

PUSTULÆ, OR PUSTULOUS CUTANEOUS DISEASE.

The pustulous class of skin affections comprehends the non-contagious diseases, characterized by distinct tumefied eruptions, filled with purulent matter, with an inflamed base, and sometimes connected with ulcerative action, which is liable to be followed by cicatrices somewhat permanent. They are rather common, though they do not seem to have the well-defined character of some other

well-known eruptive affections. This division includes a great variety of pustulous eruptions, produced by various causes, some local, and some general. I shall, however, confine my remarks to the two most prominent, viz : *Impetigo* or *Moist Tetter*, and *Porriigo*, or *Scald Head*.

IMPETIGO, OR MOIST TETTER.—This I am well satisfied is closely allied to the chronic form of a variety of the vesicular family of skin affections, and is produced by the same cause as eczema. It is a non-contagious affection, characterized by small conglomerated pustules, not unfrequently first having the appearance of a rash, but soon filling with ichorous matter, and occurring upon the cheeks or face, and sometimes upon other parts of the surface. In some cases it is accompanied or preceded by some constitutional disturbance. It is seen in clusters of small yellowish pustules, of various sizes, generally small at first, but afterward enlarging, and occurring upon an inflamed circumscribed base, slightly elevated above the surrounding skin. It is sometimes confined to one cheek, occasionally affects both, or extends to the head. The pustules soon break, or are ruptured, and discharge the matter or fluid they contain ; rarely forming a scab, but leaving a more red and inflamed condition of the parts. They commonly bleed when scratched. Sometimes, however, they form a yellowish scab, by the evaporation of the watery portion of the fluid, by which the further discharge is arrested, and the matter thus accumulates beneath. This form of the disease seems to occur somewhat in paroxysms. After a severe turn of itching, and an accumulation of matter for a week or two, the scab dries and falls off, leaving a smooth, red surface, which continues a short time, when the same appearances return as before, perhaps somewhat aggravated, and go through as in the first instance.

The different appearances and extent of the eruption have given rise to a division of this form of skin affections into a number of varieties, having however but little if any greater differences than are clearly referable to peculiarities of constitution and location. Thus it has been divided into *impetigo figurata*, *sparsa*, *scabida*, *rodens*, *erysipelatodes*, *larvalis*, and *capitis*. But as they have no practical importance, I shall not attempt to describe their peculiarities.

Causes.—What was said on the subject of eczema, applies with full force to impetigo. It is often an hereditary complaint, and will most frequently be found to occur in children being nursed by mothers who have been subject to herpetic eruptions.

Treatment.—In treating this form of skin disease, it will be necessary to bear in mind the constitutional character of the affection, and you will not expect, by mere local applications, to cure a disease that is fed by constitutional derangement. The treatment is precisely the same as that already directed for eczema, both local and general; in fact, I consider it a modification of that affection, being produced by the same essential causes. The alterative course, with the tar ointment (*unguent. picis liq. U. S. D.*), and baptisia ointment for local applications, are the main general measures to be employed. Sweet cream frequently applied has a very soothing effect.

PORRIGO, FAVUS, OR SCALD-HEAD.—These are some of the terms used to designate the other species of pustulous affections that I propose to describe. This is no doubt an infectious disorder, propagated by direct contact with the cause, or infectious matter. It is most commonly an affection of childhood, though it is liable to occur at any age. The disease is mainly confined to the scalp, though it occurs on other parts, whence it is supposed to be conveyed by the nails infected by scratching. It most generally first appears in the form of small pustules, not in distinct eruptions, but more like small blisters under the skin, with very little redness, and containing a yellowish matter. The pustules are not conglomerated upon an inflamed base, but are irregularly scattered over considerable space, though they are sometimes more closely clustered together. They generally occur around the roots of the hair, and finally destroy its vitality. The point of matter soon becomes concrete, and forms a round scab without being broken, and when examined with glasses presents a depression in the center, or a cup form. It gradually extends its circumference in every direction, becoming larger without changing its form. In this way the mere points at first become sensibly apparent, and then approach each other, giving to the part the appearance of an almost unbroken scab. The peculiar depression or cup form of the individual blisters is retained upon the surface, which thus presents the appearance of a honeycomb, and hence has received the name of *favus*, or honeycomb. But this characteristic appearance will not always be observed, as the scabs sometimes become broken, and then appear rough or scaly; while other parts of the scalp sometimes exhibit a dry and dandruff-like, or furfuraceous character.

This disease occurs most frequently as a chronic affection, when the scales, if neglected, often present a thick mass of concentric

layers of scales, so heaped up as to be decidedly prominent, with a cracked or fissured surface. The hair in these chronic cases either becomes very thin, or falls off entirely. Upon softening and removing these scales, the surface generally presents an irritated, raw appearance, with ulcerations of considerable extent and sometimes nearly through the scalp, generally associated with enlargement of the lymphatic glands of the neck.

Scald-head is not unfrequently a very slow and tedious disease, though its duration is very variable, sometimes being very short, and then again continuing for years. It generally subsides gradually, the scales becoming less, and the surface regaining more of the natural color, until the disease finally disappears entirely. In some cases the natural structure is so altered as to entirely destroy the hair follicles, and the surface is left bare, though this occurs in but a few cases. In general the hair gradually sprouts again, thickens up, and at length regains nearly its natural state.

Causes.—This disease is generally admitted to be infectious, or to be propagated by contact with the cause of the affection, and is no doubt frequently communicated by wiping on the same towel, or using the same comb and brush, with an individual who is affected. Whether its origin can always be accounted for in this or similar ways, or whether it sometimes has a spontaneous and more equivocal origin, is not yet well determined. But when it has once been started there is little doubt that scald-head can be communicated by immediate contact with the matter produced by it. It differs, however, from all the contagious diseases proper in all their great leading characteristics, being neither communicated through the atmosphere, nor having any of the qualities of regular stages and decline. [It is now generally regarded as a cryptogamous affection, and is probably propagated by the transplantation of the sporules of a microscopie vegetable fungus. S.]

Nature.—The present knowledge we possess of porrigo does not enable us to speak with certainty of the intimate nature of the affection. But the various experiments that have been made create a strong suspicion that independent vital existence has some connection with the symptoms of this disease, and the analogies which bear upon this subject go far to sustain this view. From these circumstances little doubt can be entertained, that, when the subject shall have been more carefully studied, the cause of this disease will be found to be similar to that of scabies.

Treatment.—Although the condition of the general system may

have much to do in perpetuating this affection, and in rendering it more obstinate in being removed, yet the main reliance for its cure must be upon appropriate local applications. The first thing to be done is to remove the hair with scissors, and afterward with a razor, and then thoroughly cleanse the whole scalp with soap-suds. After this the part affected should be cleansed every day with castile soap and soft water. If it is much inflamed, it may be difficult to remove at once the thick crust that has formed over the ulcerated surface. In this case, after cleansing the parts around as much as possible, the whole surface should be covered with a soft slippery-elm poultice, which should be allowed to remain ten or twelve hours, when the incrustation will be softened so as to be readily removed. After its removal, the ulceration will often be found so much irritated or inflamed as to require the continuance of the soothing poultice for a few days, which should be carefully removed and the sores cleansed twice a day. But after a more healthy state of the parts has been brought about, they may be dressed twice a day with the baptisia or yellow ointment. Or in some cases the black salve will be found to have an excellent effect.

But in those cases presenting only the inflamed or scaly character of the disease, after thoroughly cleansing the surface as before directed, the tincture of sanguinaria and lobelia in equal parts should be applied after each washing, and afterward the baptisia ointment as for the other cases. Or if the case should prove specially obstinate, the preparation called in the Amer. Eccl. Disp. sesquicarbonate of potassa should be scattered over the whole surface every second or third day, and followed by the elm poultice. I have obtained the most marked relief in some very obstinate cases by applying a pretty strong solution of caustic potash with a brush and following with the poultice. I have, in cases of young children who were not well able to bear more severe applications, derived entire relief, where the simple measures first directed failed, from the use of the tar ointment of the U. S. Dis. In other cases presenting an indolent or scurfy appearance, I have often realized as much benefit from the acetous tincture of sanguinaria, followed by the baptisia ointment, as from any application I have ever used. But whatever other appliances may be thought most advisable, there are no cases but will be benefited by, and many that can not be relieved without, constant attention to a thorough cleansing of the parts affected every day with soap-suds. If any constitutional

treatment is necessary, the alterative remedies heretofore recommended for other cutaneous affections will be appropriate for this.

EXANTHEMATA, OR RASHES.

The most important among the affections styled *exanthematous* by dermatologists, will be considered in the class of contagious affections; hence it only remains for me to discuss *erythema*, *erysipelas*, *urticaria*, and *roseola*, among the rashes.

These several affections, though manifesting their peculiarities in characteristic eruptions upon the skin, are, nevertheless, mostly symptomatic of derangement of the system, and therefore when viewed in relation to their pathology, should be considered in connection with constitutional disorders. But in pursuing the course adopted in these lectures of grouping diseases together according to their most striking analogies, I do not think it best to remove these affections from the position they have hitherto occupied.

ERYTHEMA.

This term applies to all those diffuse inflammations of the skin which occur either in circumscribed patches, or extend over a large portion of the surface, having no specific cause, and very little of a well defined character, except that it answers to no other affection. Hence the numerous varieties of this affection, which authors, who are fond of display, have thought proper to make. It is very rare that inflammation of the skin, presenting the nondescript character of erythema, occurs without being connected with more or less derangement of the general system. Even those cases of a local and very circumscribed character, and apparently produced by some irritant acting immediately upon the parts, are associated either with derangement of the stomach and bowels, or some abnormal condition of the blood. Whatever influence such conditions as acrid secretions and excretions, contact with diseased tissues, friction from clothing, or the application of stimulating substances may have in producing slight attacks, I can not doubt that the condition of the system is the main thing to be looked to in those of a more general and diffuse character.

Erythema may occur in circumscribed and irregular patches upon any part of the surface, or it may be diffused over a large part of the skin. It is very frequently seen in the angles of the limbs, or in the folds of the skin about the neck of very fleshy children, and is a very common attendant upon infantile diarrhea, being produced

at the lower part of the bowels by the acrid and irritating discharges. It sometimes occurs in fleshy persons after long walks in hot weather. In the local form of the affection, produced by friction, the cutis frequently becomes denuded, and serous exudation takes place that adds to the existing irritation. In its general character, erythema resembles the first blush that often occurs in the early stage of severe attacks of smallpox, before the eruption has given any apparent prominence to points of the skin; or it resembles erysipelatous inflammation before vesication has taken place in that disease, except that it is not usually of so bright a red and shiny color. The condition of the system productive of this disease, frequently gives rise to febrile symptoms, independent of the sympathetic disturbance consequent upon the local difficulty. We may therefore expect to find a furred tongue, costive bowels, dry skin, and diminished urinary secretion, with an accelerated pulse, in these attacks of erythema, and these symptoms will generally be found proportioned to the extent of the local disease. In its general character, when not produced by any apparent local irritation, erythema is a rare affection.

Diagnosis.—Little difficulty will be experienced by a person familiar with this affection in distinguishing it from others. The only diseases with which it is very liable to be confounded are erysipelas and roseola. From erysipelas it will be distinguished by the less swelling, and pain, the indefinite boundary of the eruption, and finally by the absence of the vesication, that occurs in erysipelas, and not in erythema. From roseola erythema may be known by the more rosy color and spotted character of the eruption, which also does not occur in patches, in the former. From the other eruptive affections it will be distinguished by the characteristic eruption of each affection.

Causes.—Nothing of importance can be added to what has already been said in regard to the causes of this affection, until our knowledge of the subject is increased by further investigation, and I will only repeat, in general terms, that it is produced by causes which operate locally by exciting irritation, and those that operate through the general system, producing derangement of the stomach and bowels, and of the blood.

Treatment.—Most cases of this affection, whether of a local character, or connected with the general system, will require a moderate course of cathartic treatment, and strict attention to the diet for some time. But however efficient these measures may be in

correcting the condition of the system most likely to be in fault, yet the paramount point is to ascertain the cause that has brought about the disturbance. If it is a mere local irritation, connected with surplus flesh, and produced by the folds of fat in the groin or the neck, great attention should be paid to cleanliness by washing the parts two or three times a day with milk and water, drying the surface with a soft, absorbing linen, and then dusting it over with scorched flour, or finely pulverized hemlock or oak bark. This should be done, however, through a flannel bag, and only after the skin has been carefully dried, as otherwise the powder itself may act as an irritant. But when the attack is connected with general derangement, the stomach and bowels will be found in all probability, to have first felt the disturbance. I have known one instance, at least, where the attack was brought on by indigestible substances taken into the stomach, and which was immediately relieved by a gentle emetic, followed by a cooling hydragogue cathartic. In some cases it may be necessary to repeat the physic, though the first may have operated sufficiently for that time; yet that course will rarely be necessary. When inactivity of the liver seems to have much to do in continuing the disease, as it has in some cases, the compound taraxacum pill may be given, say one every night.

LECTURE LXXV.

LOCAL DISEASES—CONTINUED.

Cutaneous Diseases continued. Urticaria, or Nettle-Rash: Character; Symptoms; Diagnosis; Causes; Treatment. Erysipelas: Symptoms; Varieties; Anatomical character; Causes; Diagnosis; Prognosis; Treatment. Scaly Diseases. — Psoriasis: Different Forms Described; Causes; Treatment. Lepra or Leprosy: Description; Causes; Treatment.

CUTANEOUS DISEASES — CONTINUED. — URTICARIA, OR NETTLE RASH.

If any disease is entitled to the appellation of *symptomatic*, according to my observation, it is nettle-rash. I have never yet met with the affection when it was not clearly traceable to some anterior disturbance, or abnormal state of the system, and particularly of the stomach and bowels. The disorder is characterized by irregular circumscribed swellings of the skin, generally having, at first, whitish or pale centers, and an inflamed circumference, varying in size from that of a split pea to the bigness of the palm of the hand, and frequently appearing in long irregular welts or clusters of the same appearance. Sometimes when the eruptions first appear they present an entirely light color, but soon become red. They are accompanied by an intolerable itching or stinging sensation, and on being scratched often smart and burn. They sometimes have the appearance that follows the sting of a bee, with a white center, the circumference being but slightly changed, and of a circular form. Scratching or rubbing appears to aggravate them, and slight friction on the skin will often develop them.

The eruption is exceedingly evanescent, being soon developed, and suddenly disappearing. It is not uncommon for a crop of urticaria to appear within a very few minutes, at different points of the surface of the body or limbs, but mostly confined to parts protected by the clothes or not exposed to the air; and almost as quickly disappear. It can scarcely be said to have any point most usual for its location, as it is common to the anterior and posterior parts of the body, and to all parts of the extremities. But it often disappears at one point, and as suddenly shows itself at another.

There is probably no disease that presents a more remarkable diversity of character and appearance, differing greatly in shape and size at different times; at one time it is seen upon the limbs, at another on the body; in some cases it presents an irregular cluster of the eruption of a pale color, and in others, one entire mass, of an irregular circumscribed redness. In some instances it occurs without any premonitory symptoms, and with little, if any, constitutional disturbance; in other cases the eruption is associated with general constitutional derangement and febrile symptoms. Sometimes it occurs at night after getting warm in bed, and then again comes on in the day-time. Most cases occur during warm weather, but I have occasionally met with it in the rigor of winter. Urticaria generally comes on at uncertain and irregular periods, but I have met with a few cases as distinctly periodical and regular as the best-defined case of intermittent fever. In one instance it came on every other day and at the same hour each day, and in another it occurred every day in a similar way. Thus it will be seen that urticaria has no uniform character, nor essential qualifications, but occurs under a great variety of circumstances, presents protean shapes, and is governed by no uniform laws.

Diagnosis.—The most unequivocal characteristic of urticaria, if it can be said to have any, is its variable, evanescent, and unstable appearance. Thus when an eruptive affection is met with, which appears suddenly, manifests the symptoms I have described, suddenly changes, and perhaps appears in other parts, you may feel safe in determining it to be a case of urticaria.

Nettle-rash may be looked upon as a harmless disorder, though often troublesome and inconvenient, yet rarely, if ever, proving fatal. Those cases which present periodical characteristics are often severe for the time being, and if improperly treated would no doubt degenerate into severe attacks of bilious fever, and might have an unfavorable termination.

Causes.—As already stated, nettle-rash will always be found to be symptomatic either of derangement of the stomach, possibly also of the bowels, or of an abnormal condition of the blood. The derangement of the stomach and bowels attendant upon dentition frequently produces the disease. It often results from improper and indigestible food of any kind, but more frequently, no doubt, from some kinds than others. Thus it frequently follows a meal of certain kinds of shellfish, and I have a number of times met with it after a full meal of fresh pork. It may not be

peculiar to any kind of food, but often results from excess in eating. It frequently follows the free use of fresh fruit and vegetables of different kinds, peaches, apples, strawberries or raspberries. Cabbage, turnips, and other succulent vegetables often seem to be the immediate exciting cause of urticaria. A heated and excited state of the system is very liable to be followed by an attack. But in such cases there will generally be a peculiar delicacy in the organization of the skin, and this will no doubt account for its more frequent occurrence in children than adults, and in females than males.

Treatment.—The treatment generally required for nettle-rash is of a simple character. In most cases a little attention to diet and freedom from excitement is all that is necessary. It will not be enough, however, that patients should simply avoid those articles that may have been supposed to have produced it, but they must be restricted to a very simple diet, avoiding animal food and hot bread. As the disease is most commonly connected with derangement of the stomach, it may be readily removed by the aid of such gentle medicine as experience has found to be of service in such cases. This will be found more especially the case with children, whom it is more difficult to restrict to articles that may be proper for them. As a simple remedy for this purpose, no one will be found more generally applicable and effective than the neutralizing physic (*compound powder of rhubarb*), given in sufficient doses to operate on the bowels.

But if the difficulty has been induced by recent excess in eating, the most prompt relief will be afforded by a speedy emetic. If this should not be deemed advisable, a mild cathartic will in time accomplish what the emetic would more speedily effect. A Seidlitz powder, or the antibilious physic (*compound powder of senna and jalap*), or even the mild compound aloes pills, may be given for this purpose. The more severe attacks associated with fever, but having no special periodicity, may require a repetition of the evacuants, and a longer perseverance in abstinence, or moderate dieting. Those cases presenting periodical qualities will require the same course of treatment as a case of intermittent fever. One or two interesting cases were related when speaking of that subject.

Local measures for the cure of urticaria are of no further use than merely to palliate the intensity of the itching and smarting attendant upon it. Various applications have been used for this

purpose. A solution of nitrate of potass seems frequently to have as much effect as most others. Or bathing freely with salt and water I have often resorted to with good effect in allaying the irritation. I have also used the tincture of camphor with similar effects. When the eruption has been greatly fretted, a slippery-elm poultice will relieve the burning and quiet the irritation.

ERYSIPELAS, OR SAINT ANTHONY'S FIRE.

Erysipelas may with great propriety be considered the most perfect type of inflammation, taken in its literal sense, that we can refer to. Although it is without doubt a constitutional disease, or symptomatic merely of some abnormal condition of the system or of the blood, it more perfectly answers to the idea conveyed by the term inflammation than any other known inflammatory affection. It is characterized by a circumscribed fiery redness of the skin, accompanied by a burning sensation, and generally terminating in vesication; it is associated with or preceded by constitutional derangement and fever.

Symptoms.—Erysipelas frequently commences with the symptoms of ordinary fever, and is preceded for a short period by a similar aching or soreness in the limbs, a sense of languor and debility, loss of appetite, vitiated taste and costive bowels, but soon develops more or less of chilly sensations with flashes of heat. Or it may be ushered in with a distinct chill, lasting for some time, but soon followed by high febrile reaction. Simultaneous with this, and sometimes preceding it, nausea and bilious vomiting with great uneasiness will frequently be experienced, together with pain in the back and limbs, severe headache, and often soreness of throat. Sometimes immediately associated with the development of the fever, though most commonly not until a day or two after it, you may discover, on some part of the skin, a small reddish spot often inconsiderable, but generally rapidly increasing, usually quite tender to the touch, and slightly elevated above the surrounding surface, though at this early stage not presenting the characteristic redness which it assumes at a later stage. No part of the surface seems to be exempt from the disease, but it more frequently occurs on the face, neck and head, than on any other portion. Sometimes it first appears upon the nose, sometimes upon the cheek, or about the forehead, and gradually extends more or less in all directions, but is more apt to radiate in a single course, which is often marked in advance by a slight red streak. As it travels along, the skin

assumes a bright and shiny redness, with a circumscribed boundary, and when fully developed is slightly elevated above the surrounding surface. As it moves forward, the point from which it started begins to fade and shrivel, and presents a scaly appearance; though most commonly a yellowish blister rises on the surface, which gradually dries and forms a scab, or is ruptured, discharges, and then dries, leaving a rough and scabby surface. The surface under the blister generally heals and forms new skin as the scabs desiccate and fall off; but sometimes ulceration takes place, and sores of considerable extent follow. The inflammation gradually spreads from day to day until a large extent of surface has been affected, frequently diffusing itself from the starting point, on the face or head, over the entire scalp, and in some instances even spreading itself a second time over a portion of the surface first affected. It may also in some cases subside at one point, and suddenly appear on a remote part, though this is rare.

Some attacks present little more than a mere erythema of the skin, and subside without any other change than a slight scaly appearance of the cuticle. But most cases are accompanied by some swelling, more even than can result from a mere engorgement of the capillary vessels upon the surface. In such cases, no doubt the sub-cellular structure of the skin, and even the more deep-seated tissues, are involved, and swellings of considerable extent are produced, which exhibit the characteristic erysipelo-phlegmonous inflammation, and result in abscesses more or less extensive. That condition is more likely to occur when parts are involved of a loose and cellular organization. Thus when it occurs about the eyes, they become so swollen as to close the lids, and ulceration is apt to result. Or if affecting the nose, the swelling often produces obstruction in the nasal passage, thus preventing nasal respiration. The disease is generally attended by a burning or smarting sensation; sometimes a stinging or pricking feeling is complained of, or in cases accompanied by considerable swelling, a beating or throbbing and aching sensation is felt.

Erysipelas has generally no malignant tendency, and is somewhat self-limited in its attacks, appearing upon part of the skin, gradually spreading to adjacent parts, undergoing the several changes characteristic of the disease, and finally disappearing in from six to eight or ten days. But in some cases ulcers of considerable extent follow, which require considerable time to cure. Where the disease is not entirely arrested, we occasionally observe, after

the decline of the more active symptoms, a serous, and sometimes an acrid, discharge, which continues for some time, and forms dry scales, frequently of a scabby character, upon the surface. But the general course of erysipelas is to vesicate as the inflammation extends, to form scabs or scales as it dries or declines, and to give a light flesh color, for a short time, to the surface, which gradually and finally assumes its healthy appearance.

The evidences of general disturbance and functional derangement clearly indicate, during the whole progress of the disease, its connection with the local difficulty. The tongue is coated and sometimes dry, with a red tip and edges; the skin is hot and dry over the body, and generally on the extremities, though they are sometimes cold; the bowels are costive, and the arterial action is always increased, sometimes to a very great extent, though generally not over rapid, but full and strong. In some instances, when the scalp and face are the parts involved, the brain becomes more or less disturbed and slight delirium ensues; or in more malignant attacks, presenting congestive symptoms, great drowsiness exists, and the patient is liable to sink into a state of coma.

Individuals of intemperate habits attacked with this disease generally present a decided asthenic state of the system, with low, muttering delirium, or great dulness and insensibility, a weak pulse, purple countenance, and generally cold extremities and a cool skin. In such cases the mouth has the ordinary appearances of typhus or congestive fever, dry and scaly lips, red or dry and cracked tongue, sordes on the teeth, rapid and feeble pulse, irritable bowels, and generally more extensive vesication, and formation of abscesses or ulcers.

The books mention a peculiarity of erysipelas that has not occurred in my practice, but which I doubt not may occasionally be met with, viz: a tendency to retrocede and fall with considerable force upon some internal organ, such as the brain, heart, or lungs; and when this does occur, it is always attended with considerable danger. This would be known by the sudden disappearance of local symptoms, and a concomitant development of the symptoms attendant upon disease of the organ involved.

I have thus presented the outlines of ordinary cases of erysipelas, with such modifications as I have observed. The earlier writers have made a number of varieties, each predicated upon some one of the different phenomena of the disease, to which they have devoted special attention. These distinctions are still retained,

though by some of the more sensible authorities they are regarded as having no practical advantage or application. I have already referred to the *erysipelas phlegmonodes*, or that modification in which the inflammation extends to the cellular structure, producing a more than usual amount of swelling; this is one variety. Another is predicated upon the traveling character of the disease, and is called *erysipelas erraticum*. A third variety is where the disease occurs in debilitated systems, producing some œdema of the parts, and is called *erysipelas œdematodes*. And a fourth variety is called, from its occasional termination in gangrene, *erysipelas gangrenosum*. Other distinctions are made by authors which you will readily perceive are merely expressive of some particular characteristic of the affection, and are of no practical utility. I refer to the *local erysipelas*, *erysipelas fever*, *bilious erysipelas*, *malignant erysipelas*, etc.

The *anatomical character* of erysipelas has very little of interest connected with it, as it develops no important scientific principles, and sheds no light on the nature of the disease. Sometimes the redness of the skin entirely disappears, then again it remains and turns purple. But where important complications are connected with it, the morbid appearances would present a corresponding condition.

Causes.—The numerous cases that have come under my observation have so invariably presented evidences of general derangement of the system, as to leave no doubt in my mind that erysipelas should be considered among the symptomatic disorders. But in what particular way the local symptoms are connected with the general derangement is not well understood. Some peculiar circumstances attending one or two cases recently occurring in my practice, the influence of depurating agents upon the blood, which I have uniformly observed, and particularly the effects of cholagogue cathartics, have strongly inclined me to consider the disease as connected with the condition of the blood. To illustrate this view, I will state one or two cases. A young man, not much accustomed to out-door exercise, though generally enjoying good health, went skating, and, after becoming considerably heated and fatigued, cooled off rather suddenly. During the night he was attacked with a chill, followed by high fever, and the next day an extensive erysipelas appeared on his face and head. A lady, who had long been troubled with costiveness, going a number of days without a passage, and generally having a dry skin, was attacked with a chill, followed by fever, which proved rather obstinate, and on the second day extensive erysipelas was manifest on the face. Copi-

ous bilious evacuations have always been followed by marked relief in this disease. I therefore suppose that any causes, calculated to retain morbid, effete matter in the blood, will, under circumstances favorable to febrile disease, be liable to produce an attack of erysipelas. In this view long continued costiveness, or the suppression of accustomed evacuations, and sedentary habits, would be liable to operate as causes of the disease. In either of these conditions any thing calculated to destroy or interfere with the proper balance of the circulation might act as an exciting cause. Thus excessive mental emotions, as anger or great fear, severe exercise, or sudden exposure to cold when the system is heated, may induce an attack of erysipelas; and it is a common attendant upon fevers of various forms. I have frequently seen it in connection with bilious fever, and it very commonly attends winter or congestive fever. The cases of erysipelatous inflammation which sometimes follow wounds or surgical operations, in my judgment, indicate a previously existing derangement of the system.

The cases of an apparently contagious character occurring in hospitals, I have no doubt are modified by the animal miasm that abounds in all such situations, and the disease occurs so frequently in such places that it often *appears* to be communicated from one person to another. But I feel assured that a careful discrimination would discover an important distinction between such cases and contagious affections, and at the same time would show an immediate relation to infectious disorders in this instance similar to the infection of typhoid fever; to the discussion of which, on a former occasion, I would refer you for an explanation of this subject. That *ordinary* erysipelas, at least, has a claim to be considered a contagious disorder, I presume will scarcely at this day be seriously argued. Of all the cases that I have observed, I have no recollection that any two of them occurred in the same family, in sufficient proximity in point of time, to render it probable that they had any relation to each other. But it may prevail in an epidemic form, and cases may occur so nearly together as to give it the *apparent* character of contagion. Very little reflection, however, will show this conclusion to be erroneous, as in this view, and for the same reason, may any epidemic disorder, such as a diarrhea, for instance, be called contagious. There have been a number of somewhat notable instances of this disease prevailing in an epidemic form, presenting all the peculiarities of

epidemics in general, and which have often been mistaken for contagions.

Erysipelas is liable to occur at every season of the year, but is more frequently observed in the cold and variable seasons than any others.

Why the derangement of the system referred to should produce the erysipelatous form of inflammation, in preference to the common phlegmonous form, is not easy to explain. But then why the other form of inflammatory action should be excited in other cases, in preference to erysipelas, is equally obscure. We can suppose, indeed, that certain conditions of the system develop one form, and another condition results in the other kind. This, however, only leaves the subject where we found it, without explaining the *nature* of the difficulty, and here, in the present state of our knowledge of the laws of the economy, are we compelled to leave it.

Diagnosis.—During the premonitory and febrile stage of the disease, before the appearance of the local symptoms, there are no characteristics by which we can correctly distinguish erysipelas from ordinary cases of *fever*. But when the inflammation shows itself, very little difficulty will remain. In the early stages, before the disease of the skin is apparent, there will generally be some tenderness in the tissues which are to be affected. If on the neck, the lymphatic glands will be found slightly enlarged, and tender to the touch. The intense redness, of a circumscribed character, with a slight elevation, especially after vesication has taken place, will enable you to distinguish it from erythema,—the only disease with which it is liable in any wise to be confounded.

Prognosis.—If my personal experience should be taken as the test of results, there are few diseases the prognosis of which would be considered more favorable. Thus far in my practice, I have no recollection of ever having lost a case, out of at least a hundred. There can be no doubt, however, that erysipelas in its epidemic character is a more formidable disease, and far more likely to prove fatal, than when it occurs in a sporadic way. But even in its epidemic form, when internal organs are not involved by metastasis, and when properly treated, it should rarely have an unfavorable termination. When complicated with other more grave disorders, erysipelas furnishes additional motives, for alarm, as indicating derangement of the system not readily corrected. Thus when occurring with typhoid fever, it shows a condition of the

system always portentous and to be feared. So also when occurring as the sequel of dropsical affections, in debilitated and worn-out constitutions, the termination of the case may always be looked upon as unfavorable.

Treatment.—In most cases of erysipelas that have occurred in my practice, the febrile phenomena have presented a distinctly remittent character indicating the presence of malarial influences, and have required a course of treatment very different from that which would, doubtless, be found necessary in some sections of the country. The effect of the antiperiodic remedies, upon the local inflammation when administered for the periodical attachment in these complicated cases of erysipelas, very clearly settles the compatibility of those remedies with inflammatory action however intense. Instead of aggravating the local affection, I have often seen the fever decline, a gentle perspiration ensue, and the inflamed parts become less red and diffuse, under the operation of the quinia and iron; and by following these effects with a moderate cholagogue cathartic, the entire symptoms have disappeared, and the patient has soon recovered. I therefore never hesitate to administer the quinia and iron in the same doses, and at the same intervals, that I would in an uncomplicated case of remittent fever, if the case in hand presents evidences of periodicity characteristic of malarial disorders. I should not in fact require the same unmistakable evidences of malarial influence that are usually presented by a simple attack of remittent fever, as the local inflammation would naturally tend to obscure the remissions and exacerbations that would otherwise be more distinct. The only question therefore with me is whether the circumstances of the case are favorable to the existence of malarial fever. I feel more confidence in recommending this course than I should if I had ever witnessed an aggravation of the inflammatory or general symptoms from the use of these measures,—a result which has not followed even where subsequent observation apparently failed to confirm the first suspicion of malarial complication. I should by no means conclude that such an association did not exist, though the first administration of the febrifuge remedies did not arrest the fever, since these complications are generally found more unyielding, and often require two or three times the usual amount of medication to produced the desired effect. It will be best, however, in order to save time, and thereby shorten the sufferings of the patient, to combine with quinia and iron, the second day of their admin-

istration, a sufficient amount of podophyllin and leptandrin to secure a free discharge of any accumulations that may exist in the bowels, and rally the action of the liver to an increased secretion of bile. The best time to administer the antiperiodic remedies is when the first tendency to a remission is perceived; though in these cases the remission is liable to be so slight as scarcely to be noticed, and, as it is safe to do so, I have generally commenced on the first morning after I have seen the patient, if any circumstances suggest the existence of such a complication, and have continued their administration until the usual time for an exacerbation, or a sensible increase of the fever, or, if the fever did not essentially vary, until the specific effect of the medicine had been realized, when it should be suspended; and on the next day repeated with the podophyllin and leptandrin, as before directed.

If however considerable soreness of the throat, with evident derangement of the stomach, should complicate the case, a moderate emetic may be premised before administering the quinia and iron; or if the case did not yield, as you might think it should, after giving the antiperiodic remedies as before directed, the emetic may be afterward given. But if it is not deemed necessary to treat the case as for the malarial complication, the main indication is to excite into as active a state as can well be done all the great depurating functions by which all the morbid accumulations, that evidently have much to do in producing the disease, can be eliminated from the circulating mass. Thus the skin, kidneys and bowels, with their coöperative glandular associates, should all be simultaneously acted upon by the remedies best calculated for this purpose. The skin should be frequently and freely bathed with the tepid alkaline and whisky wash, while at the same time the remedies given to excite the other secretions should be combined with such as will determine to the surface and secure a moderate diaphoresis. It will not be best to administer active sudorifics until after the bowels have been freely acted upon, so as to admit of quietly remaining in bed. Therefore as simple a remedy as can be given at this stage of the case is a solution of acetate of potash in from three to five grain doses every two hours. This has the advantage, also, of operating with considerable efficiency on the kidneys. But the most important measure, or at least that which seems to be most efficient in mitigating the symptoms, will be found to be a thorough cholagogue cathartic. The best combination that I have found is the compound taraxacum and podophyllin

pill, which I have often heretofore recommended. One of these pills may be given every six hours, until a free cathartic effect is produced on the bowels, and you will rarely be disappointed in discovering in the evacuations manifest evidences of copious biliary secretion. It will be necessary, in many cases, to repeat this evacuation every second or third day, until the fever and inflammation are relieved. The bath before directed, and the acetate of potash, should both be administered simultaneously with the cathartic. But if the tongue and other symptoms show evidences of accumulations in the stomach, the first measure should be a mild emetic. The acetic tincture of sanguinaria and lobelia may be given in these cases, though I have more frequently administered the eupatorium and lobelia infusion than any others. After the hepatic and other glandular secretions connected with the bowels have been appropriately stimulated by the pill before directed, a more free transpiration upon the surface may be excited by the aid of ten grains of our diaphoretic powder administered one in six hours, and assisted by the use of a decoction of mullein leaves. This decoction will also be found among the most reliable diuretics that can be given in such cases; rarely failing to increase the urinary secretion in a very sensible degree.

For those cases of erysipelas occurring in individuals of intemperate habits, it will generally be necessary to temper the evacuant remedies with moderate stimulants; especially if the case is marked by the usual and ordinary symptoms of exhaustion and debility. A similar course will also be found necessary when erysipelas occurs in aged persons, and in those whose systems have been previously debilitated by chronic affections. In addition to the quinia and iron, already directed, I have, almost from the beginning of the treatment in these cases, uniformly given diluted ale in such quantities as the condition of the patient seemed to require. Though the cholagogue and cathartic remedies will be necessary, yet they will not be indicated, nor should they be given, to the same extent as in different constitutions. When the exhaustion is great, and the bowels are inclined to be loose, it may be best to withhold the cathartics altogether. One or two cases have occurred in my experience in which the tongue presented a red appearance, without any coat upon it, and the bowels were so irritable that I dispensed with all but the quinia and acetate of potash, applying at the same time hot fomentations to the stomach and bowels; and the result was entirely satisfactory and favorable.

Although I have no confidence in the curative influence of local appliances in erysipelas, yet some local treatment will frequently afford temporary relief to the patient, and tend to restrain the traveling character of the inflammation. I have, however, seen the inflammation overleap blistered surfaces, and extend as rapidly as before the blister was used. I have also seen it bid defiance to a circle of nitrate of silver, and even to the contracting effects of collodion, though applied to both the inflamed surface and the adjacent healthy skin, and occupy the contiguous parts as though they had never been applied. But it frequently happens that some particular local measure is used, after appropriate general treatment, with the apparent affect of affording relief to the local symptoms, and it thereby often acquires the reputation of performing a cure. I have not, however, seen any satisfactory evidences of a curative character in *any* local treatment, and am compelled to look upon such appliances in erysipelatous cases as merely palliative. This purpose some of them are well calculated to answer.

My experience with nearly the whole catalogue of local measures, blisters, iodine, collodion, nitrate of silver, acetate of lead, sulphate of iron, burnt or scorched flour, and hot slippery-elm mucilage, has led me to consider the two latter as the most beneficial. I have especially derived better effects from the application of linen cloths dipped in hot slippery-elm mucilage, and changed as often as they lose their slippery feel, than from any other measure. You will rarely fail to observe the red and purple aspect of the local difficulty change to a lighter pink color, and the swelling somewhat diminish under the application. It has the advantage also of being very grateful to the feelings of the patient, affording relief to the burning and throbbing pain that often accompanies the disease. For a change I have frequently applied scorched flour, allowing the surface, slightly covered with the dry flour to be exposed to the air. If vesication has taken place, the flour will generally form a crust upon the surface, which, in severe cases, is liable to retain the acrid effusion and thus produce ulcerative absorption, and is therefore objectionable. In cases of a mild character, in which the general system is involved to a limited extent only, penciling over the whole inflamed surface with the collodion seems to answer a better purpose than any other local application. Its immediate effects in these mild cases are such as would readily impress the inexperienced practitioner with the idea that it is a reliable and

cervative remedy in all cases. It should be applied so as not only to cover the inflamed surface, but to extend some distance upon the surrounding healthy skin.

Various other applications have been recommended, especially creosote, as having decided beneficial effects; but I apprehend they have no better claims, and perhaps less, than those already mentioned. The mercurial ointment is highly lauded by very respectable authorities; but having been tested by applying it to one side of the face affected with the disease, while the other side, similarly involved, was covered at the same time with lard, and no difference in the effects having been observed, it has been mainly abandoned. Dr. Wood says, "mercurial ointment at one time enjoyed much credit as a local application. Simple ointment or lard was afterward found about as effectual. Perhaps they both act by excluding the air. Rayer, however, states that in erysipelas of the face, he has often caused one side to be rubbed over with lard, and the other with mercurial ointment, and, on several occasions, one of these unguents was applied to one side, while the other was left untouched, and he never perceived that the disease was influenced by any of these proceedings."

[Whatever other treatment may be required by the symptoms, the tincture of the muriate of iron given internally in doses of from 10 to 30 drops three times a day, and applied as often with a soft brush to the entire inflamed surface, seldom fails of producing marked benefit. S.]

SCALY DISEASES.

There are but two of the four or five scaly disorders of the skin which I consider it important or useful to discuss in this connection. These two, which I have frequently observed, are *psoriasis* and *lepra*.

PSORIASIS.

This is a cutaneous disease characterized by slightly elevated, pimply, inflamed spots on the skin, covered by light colored scales, without any vesication. The disease presents a number of modifications, all however presenting the characteristic red and scaly appearance. The different forms of the affection have been distinguished by authors according to the supposed characteristic of each. Thus they mention the *psoriasis guttata*, presenting the small papulous and isolated eruption, without a depressed center, but covered on the top with a dry scale; and the *psoriasis diffusa*,

in which the papulous elevations are so numerous as to present almost one continuous blotch, covered with a dry and scaly scurf. But when deprived of the scales, the surface presents a red and chapped appearance, resembling somewhat one modification of herpes. This form is apt to occur about the joints, on the anterior portion of the legs or the back of the arm, though it is sometimes found on the back and other parts of the body. It is attended by a burning and smarting, and a troublesome itching sensation. When the surface is chafed it is liable to inflame, and then often presents cracked fissures, which bleed and become sore and painful.

This scaly affection presents itself in a more severe and aggravated form, described by the term *psoriasis inveterata*. But it is supposed to be merely an aggravation of the last described modification, produced by neglect and want of cleanliness, and occurring in old and infirm constitutions, or in those whose systems have been contaminated by intemperance and filth, or extreme privations and hardships. It presents an inflamed and thickened condition of the skin, with considerable fissures, which often become filled with the dry scales collected from the surface. It sometimes extends over a large portion of the surface, and especially to the feet, hands, and angles of the extremities, so as to embarrass the ordinary movements, frequently producing pain and great inconvenience.

Another modification of this affection is described, presenting itself in broad and irregular patches, or assuming long and narrow strips of irregular shapes, somewhat resembling a variety of herpes; this is called *psoriasis gyrata*. Psoriasis has received various other names, predicated upon its circumscribed character, but having no practical advantage, either as illustrating the symptomatology of the affection, or in any way influencing its treatment. I shall not detain you by considering them, but will simply remark that the distinctions referred to are referable to the parts affected, such as *psoriasis fascialis*, when it occurs on the face, and so of other parts.

Psoriasis, affecting only limited portions of the skin, rarely ever manifests much disturbance in the general functions. But the more extensive and severe forms of the affection, if from no other influence than their sympathetic relations, generally show unmistakable evidences of constitutional disturbance. In these cases there is more or less fever, with some headache, furred tongue,

costive bowels, and general functional derangement in the glandular and depurating organs.

Causes.—Little doubt can be entertained, in my opinion, that psoriasis is mainly produced by general derangement of the blood, growing out of the want of appropriate change in that fluid from exercise and other habits, or the direct contamination from unwholesome or innutritious food, or inordinate indulgences in the use of stimulants. The poisonous influence of old, stale, and worn-out elements of animal matter, retained in the system in consequence of long continued sedentary habits, is not sufficiently appreciated by the profession or the public, and I am well convinced has much to do in producing disease, and when properly considered and provided against may have an important bearing on its cure.

Treatment.—The condition of the systems usually affected with this disease, and all the circumstances connected with it, so clearly point to a general alterative course of treatment as being indicated for its removal, that the first impulse, when called to a case of the kind, is to administer without hesitation that class of remedies that most promptly answer this purpose. In severe or extensive attacks, not only as a preparatory step to a more general course, but also as exercising an immediate influence on the blood and especially the glandular secretions, it will be advisable to begin the treatment with a pretty thorough hydragogue cathartic. It may also be advisable to repeat it occasionally during the continuance of the more inflammatory symptoms; unless some appearances of gastro-intestinal irritation should present objections to the use of active cathartics. The antibilious physic and cream of tartar is, perhaps, as mild as any that can be given, and at the same time sufficiently thorough. When the tongue presents a thickly-coated appearance and other evidences of gastric accumulations, a mild emetic may be advisable. But after the first passages are freely evacuated, and the system is thereby prepared to respond readily to the action of other medicines, a decoction of solanum duleamara is, for the majority of these constitutional skin affections, the most effective medicine we possess. As an alternate in such cases, the sirup of stillingia and iodide of potassium is one of the most reliable alteratives that can be used. Whichever of these remedies is preferred, it should be remembered that, to derive any marked advantage or permanent effect, it should be persevered with for some length of time.

When the system is greatly enfeebled by age or intemperance, it may not be advisable to administer as active treatment as that recommended in the beginning; emetics, especially, in such cases sometimes appear to have unfavorable effects, though a moderate cathartic will rarely be found objectionable, unless its use is contra-indicated by evident irritation in the stomach and bowels. At any rate the taraxacum pill may be given until a free bilious character is manifest in the evacuations. Such cases, also, will not bear as close and rigid a course of dieting as may be necessary for more robust and plethoric constitutions.

As a local measure, the application to the diseased surface of linen cloths dipped in hot slippery-elm mucilage, and frequently changed, as recommended for erysipelas, will afford more comfort, at the same time that it will be found a better palliative, than almost any other remedy. But when this application is either inconvenient or inappropriate, from the circumstances of the case, the surface of the diseased parts may be softened by applying the yellow or wild indigo ointment two or three times a day. As a depurating measure, frequent bathing of the whole surface is not to be overlooked. A sponge or warm bath should be taken at least every day. This will be particularly beneficial to constitutions weakened by intemperance, as it affords a very important outlet for the morbid matter retained in the circulation on account of the morbid condition of the skin, arising from its sympathetic connection with the mucous membrane of the stomach. The diet should be simple, and at first light; but as the disease declines, it may be improved, in order to repair the waste upon the blood produced by the medicines.

Various other remedies have been recommended, and perhaps some of them may possess equally efficient properties with those already prescribed; such as the sulphur-bath and tar-ointment. I have used both these measures for other forms of skin affections, and with evidently good effect, especially the tar-ointment. When the ointment is used, the parts should be constantly covered with it.

These are the chief curative measures which I have found effective in most of the cases that have come under my observation. Still, it will be all-important, in view of a speedy cure, to ascertain, if possible, the causes that have mainly or entirely contributed to its production, and remove them, or change the habit that has brought it about, whatever that may be found to be.

LEPROA, OR LEPROSY.

This is a singular skin affection, closely allied to psoriasis, differing mainly in the form of the eruption, sufficiently distinct, however in this respect, to justify a separate description. It is characterized by a very high colored eruption, appearing in differently formed and slightly raised eminences; some of them being round, but others irregular, and varying from the size of a split pea to that of a dime, and perhaps larger, with a depressed center, and covered with light colored, thin scales. These eruptions occur mostly on the extremities, particularly the forearms, and sometimes appear in clusters, but more generally are irregularly scattered upon the parts affected, extending frequently to the body and head. The eruption presents a very striking and peculiar appearance; the slightly elevated, circular or irregular, dark red spots, depressed in the center, and partly covered with a tough, yellowish and shining scale, contrast singularly with the natural and healthy condition of the intervening skin, and leave a dark purple spot for some time after the eruption has subsided. In some cases the circular spots enlarge to a considerable size, radiating in one or more directions, and giving to the eruption an irregular and ragged appearance. Or they sometimes extend in every direction, and still retain their circular character, inflaming at the circumference as they progress, while the central portion begins to assume a more healthy state, and thus present, in some respects, the appearance of a variety of herpes. In very severe cases the eruption greatly exceeds its ordinary size, extending over a large surface, running together, and exhibiting the appearance of a continuous disease, though mainly, the outlines of the circular form of the separate eruptions may be discovered. When, in these extensive scaly patches, the scurf is removed, furrows of considerable depths will be found filled with the crumbled scales. These cases exhibit strikingly the characteristics of psoriasis; and from the general character of the disease, little doubt can be entertained that it is closely allied, in its essential nature, to the latter affection. In fact, it is extremely questionable whether any greater difference is ever observed between the two affections than is often seen in various other diseases, dependent on difference of constitutions, and on the state of the system at the time. The undoubted connection of leproa with the condition of the general system accounts for its long continuance where it is neglected and allowed to progress without treatment.

Causes.—What has been said in regard to the cause of psoriasis applies equally to lepra; and, indeed, the identity of the causes producing the two affections leaves but little doubt that the diseases are identical.

Treatment.—Moderate physics and the free use of solanum dulcamara are the only remedies I have ever had occasion to prescribe, together with diet and bathing. The treatment directed for psoriasis applies with full force to this disease.

[In cases attended with anæmia and debility, the use of tonics, and especially of chalybeates, and in some cases cod-liver oil, have been found beneficial. The chlorate of potash as an alterative, and as a remedy that promotes the development of blood-corpuscles, may also be given in moderate doses, twice or thrice daily, for a time, with advantage. S.]

LECTURE LXXVI.

CONTAGIOUS DISEASES.

On Contagion.—*Small-pox or Variola: Symptoms and Course; First Stage; Second Stage; Third Stage; Confluent and Distinct Forms; Varioloid or Modified Small-pox; Results from Partial Protection; Various Hypotheses; Author's Views; Progress: Morbid Anatomy; Cause; Diagnosis.*

ON CONTAGION.

I now come to discuss a class of diseases distinguished by one unequivocal characteristic. I refer to *contagious diseases*. And instead of treating them under the head of eruptive fevers in part, and scattering others in various other connections, I have thought a more distinct view of the phenomena of contagion, and its relation to other diseases, might be presented by considering them together. There is moreover a manifest impropriety in arranging three or four of these affections only under the head of eruptive fevers, as many other eruptive diseases are equally entitled to that appellation and to the same arrangement. Or if the arrangement has reference to their relation to constitutional derangement, then the objection is still more valid, since the most of the minor eruptive diseases are found to involve the general system as well as the few that are thus arranged. A rigid adherence to this arrangement would have required scabies and porrigo to be included under this head, but as they are mere local affections, propagated by transplantation, it does not seem proper to class them with contagious diseases in which the system at large is involved.

In order to understand what is meant by contagion, it is necessary to consider *in what contagious diseases differ from other known affections*. In the first place, then, they are supposed to be produced by a specific poison generated in the system during the progress of the disease, and capable of producing a like affection in other unprotected systems coming within the range of its influence, but not requiring immediate contact with the system from which it emanates. In the second place, all this class of diseases have certain general laws, controlling their influence upon the system, to

wit: certain fixed periods of incubation, a regular rise, progress, and decline, and a certain property of protecting the system against future attacks of the same kind. These, I apprehend, will be admitted to constitute the main peculiarities of contagious disease. I need scarcely illustrate the first proposition, as I am not aware that any difference of opinion exists among the profession in regard to it. That small-pox, measles, whooping-cough, scarlet-fever, mumps and chicken-pox are produced by a specific poison, without coming in immediate contact with the subject of either of them, is, I believe, an agreed point among medical men everywhere. The relative susceptibility of different persons to the several diseases named differs very considerably; and the greater or less immunity which each disease affords to those who have been affected by it, also differs in some respects. But the difference is not sufficient to change the principle, and should be considered in the light of an exception to a general rule. Thus, more persons may have second attacks of scarlet-fever than of small-pox, or of whooping-cough than of measles, or *vice versa*. Yet these second cases are so rare in comparison with the perfect protection afforded in most of the cases, as to make the second attacks only exceptions to the rule of protection. Thus, too, small-pox may be communicated at a greater distance, and under circumstances that would render scarlet-fever innoxious; so also of measles compared with mumps. Yet this difference in susceptibility, and the distance at which, without immediate contact, each disease can be communicated, are peculiarities of the several diseases, and do not in the least affect the rule of contagion.

That the several contagious disorders are governed by certain laws as regards their incubation or latent period, and the periods occupied in their rise, progress and decline, is a proposition which I think the experience of every physician will amply sustain. It is true that they may vary slightly in all these respects, but no more than might naturally be anticipated from the differences in constitution, and in the characters of the causes that may produce them. And they may be complicated with local disorders, which may so control the development and continuance of symptoms as in some measure to remove the case from the class of diseases to which it would otherwise belong. Thus, the latent period of measles may be stated at about a week, and this may be considered the time which experience has abundantly shown to intervene between exposure to the cause of the disease, and the appearance

of the first symptoms, and any variation from it is considered only as an exception to the general rule. So, also, the rise, progress and decline of measles generally occupy about ten days; and though cases may occasionally vary from this, they are simply exceptions to a great general rule. Thus also small-pox has its regular period of incubation, which is from nine to twelve days, and it has three stages besides its latent period. These three stages constitute the rise, progress and decline of the disease, and in its uncomplicated form they will be found to be uniform and equal in most cases, or sufficiently so to constitute a rule, which any slight variations will by no means destroy.

These principles will be found to apply with equal exactness to the other contagious disorders, and I have ventured, therefore, to call them the laws of contagion; and any disease that is not governed by these general rules, can not belong to this group of diseases, and must be placed in some other connection. Having thus defined the principles of contagious disorders, we are now prepared to appreciate the propriety of the arrangement, and understand what diseases legitimately belong to this group. I shall accordingly proceed to consider the various affections of this class.

SMALL-POX OR VARIOLA.

Small-pox is perhaps the most loathsome and offensive disease which afflicts the human family. It begins with the febrile stage, which continues about three days, and sometimes a little longer, and is followed by an eruption not very striking at first, but soon becoming characteristic. The eruption passes through several stages; first, of vesication, then of maturation, and lastly of scab or maturity, all occupying about eight days; so that the whole period of the disease, when running through its several stages, from the initial to maturity, occupies about twelve days, and the time intervening between the exposure to the cause and the initiatory stage will generally be found about nine or ten days.

Predicating a distinction upon a local symptom, indicative, as a general rule, of the violence of the attack, authors have recognized two forms of the disease, viz: *distinct* and *confluent*. The first is characterized by the single or isolated appearance of the eruption, and the last by its running together and forming more of a continuous vesicle and scab. The distinction however is one of mere fact, without any practical utility, both forms being often exhibited in the same case. Partly for the convenience of its considera-

tion, and partly as affording points for reference in the discussion of some of its doctrines, small-pox has been divided into three stages: first, the eruptive or initial; second, the stage of maturation; and third, the decline. But preceding the actual invasion of the disease, more or less of uneasiness and uncomfortable sensations will be experienced, not very unlike those that precede the actual developments of other acute diseases. For convenience sake, more than any thing else, I shall follow this distinction of stages.

Symptoms and Course.—The *first stage* or actual development of small-pox commences, in most instances, with the ordinary symptoms of remittent fever, with the addition of some few rather diagnostic symptoms. Chills or rigors of different degrees and various duration are the usual beginning, followed by febrile reaction, heat of skin, frequent pulse, furred tongue, thirst, epigastric tenderness, and generally disgust of food, nausea, and vomiting. With these symptoms, there is a severe pain in the head, and an intolerable distress in the back, which sometimes extends down the limbs. It will be seen I have enumerated no symptoms not common to an ordinary attack of fever, and the only distinction that will mark the case as one of a suspicious character, will be the intensity of the pain in the back, and the irritability of the stomach. In some cases, even in this stage, a soreness of the throat will be complained of, with other symptoms usual to colds. In a few cases, the febrile symptoms are very violent, and in others, more or less moisture will be observed. Cases of high febrile reaction are often attended with great determination to the head, a wild expression of the eyes, and violent derangement. In other cases, however, patients become stupid and difficult to rouse, and continue so throughout the progress of the disease. Others, again, are extremely restless, wakeful, and uneasy, tossing about from one side of the bed to the other. In children, the appearance of the eruption is not unfrequently accompanied by a severe and protracted convulsion. The fever usually continues with more or less violence, and often with distinct remissions and exacerbations, for three or four days, when the appearance of the eruption affords a partial relief, and the fever subsides. The eruption commences about the third or fourth day of the attack, with minute red specks upon the face and neck, and afterward upon the upper part of the chest, and gradually extends over the rest of the body and extremities. It varies, however, in different parts

of the system ; in some places, single small pimples will be seen ; in others clusters of them, and often the red points become for a limited space a continuous blotch. In this way the eruption continues to increase and extend until the fourth or fifth day, when it is fully developed, and with the increase of the eruption, the fever declines, until it entirely subsides, leaving the patient in a comparatively comfortable condition.

The *second stage* is said to commence when the eruption is fully established, and then continues to change in somewhat the same order as in the first. At this stage the eruptions are supposed to begin to fill, though while some will exhibit the mere vesicular state, others present the more distinctly characteristic papular form, with a dark depressed center, and a more vesicular and raised border or circumference. When filled, they have a distinct hard feel, with the inflamed areola around them, and when they are numerous present an inflamed state of the whole intervening skin. The eruption gradually dries from the center to the circumference, the vesicles at the same time changing from a pellucid and, at first, conical pimple, to a flat and circular form, and to a dark maroon and, at length, nearly black color, when they dry up and scale off. While this is the character of a portion of the eruptions, others of them, and especially those on the limbs, lose their umbilicated appearance ; a yellowish, white matter forms, and they swell out and exhibit the distinct saculated shape, in which the cellular character of the vesicle is entirely destroyed, and upon being punctured collapse. The quantity of the eruption varies the appearance of the patient, both during the progress of the case and during drying and desquamation. In some cases, the face, even in the distinct variety, exhibits a bronzed and almost black appearance, with only here and there a point of a different appearance ; while in others, there are clusters of dark scabs, with a large portion of the skin but little altered.

During the progress of the eruption, especially after maturation begins, a severe itching is felt, which in children is so intolerable as to induce scratching until the surface is made one bloody scab ! The eruption is not confined to the skin, but is observed to extend into the nose, mouth, and even eyes, especially involving more or less of the eyelids, and to all parts of the body, including the genital organs of both sexes, and often extending within the vulva. It frequently progresses down into the fauces, and greatly embarrasses both deglutition and speech, accompanied by a profuse and

annoying secretion of mucus that often adds much to the sufferings of the patient. The inflammation attendant upon the eruption extends to the deeper structures of the skin, producing considerable swelling and, often, complete disfiguration of the face, so that the most intimate friends could not recognize the patient. The swelling is not confined to the face, but is observed in all parts of the system—body, hands, feet, and scalp. During the stage of maturation, there is a peculiar exhalation of a disagreeable, and often exceedingly offensive odor, which is considered strikingly characteristic, and is thought by those most familiar with it to be readily recognized.

After the eruption is fully perfected, and maturation is complete—which occurs about the eighth or ninth day of the disease—a secondary fever sets in. The violence of the fever depends upon the extent of the maturation, and the sensibilities of the patient. In some cases, when the constitution is very sensitive, the secondary fever will be severe with a slight eruption. Then again, in persons of great insensibility, a copious eruption and extensive maturation will produce but slight secondary fever. But other things being the same, the secondary fever will be found to be in proportion to the extent of the eruption, and the amount of the maturation.

The *third stage* is that of decline and desquamation. The fever begins to abate as the eruption assumes the form of dryish scabs, which in some places begin to loosen up and perhaps come off; the swelling of the face rapidly declines, and by the twelfth or fourteenth day of the disease the scabs have become generally dry and hard, and many of them fall off. The eruption is later in becoming complete on the extremities, and does not generally disappear from them for a number of days after the face is free from scales. When the scales have entirely disappeared, a reddish scar is left and in severe cases the whole face presents a pitted and entirely red appearance, not much less so than in erythema.

The *confluent* variety of small-pox differs only in the severity of the attack, and the extent of the eruption. The whole symptoms present a far more grave and violent character; the fever attendant upon the first stage is far more severe, and the pain in the back is so distressing as to constitute the main complaint of the patient. Convulsions are more common and severe, the delirium is more violent, and the stupor more profound. A troublesome cough and sometimes oppression of the lungs, oppressive dyspnœa, and pain in the chest and stomach, are complained of. The eruption, in

aggravated cases of this kind, presents a complete erythema, that exhibits no line or distinction over the entire surface; but this red and inflamed appearance is most frequently observed in distinct patches, with more natural and healthy skin intervening. A violent delirium is no uncommon attendant upon attacks of this kind, with great restlessness and often cold extremities.

As the disease continues the eruption increases, though it is not of the separate and distinct character of the other form but is of a continuous maturation, frequently an inch or two in extent; sometimes large portions of the skin present a dark purple appearance, with irregular patches in a vesicated and matted condition, while other portions of the eruption present a more distinct character. In some cases the large patches of eruptions produce so much of inflammatory action as to involve the subcutaneous structure, and the ulcerated process leaves a deep sore resulting in a cicatrix.

The eruption that occurs in the mouth and fauces is more extensive than in the *distinct* variety, and the attendant soreness of the throat is far more intense, and in some cases the accompanying inflammation extends to the larynx and trachea, and produces severe inflammatory croup. In this complication of the disease, there is great danger of infiltration into the submucous and cellular tissues of these parts, which might result in suffocation and complete asphyxia. This will be preceded for a short time by a loss of voice, with a suppressed and wheezing cough, a feeble pulse, and every appearance of a want of proper aeration of blood. The lips become purple, the capillary circulation in the extremities is obstructed, the eruption becomes livid, the respiration difficult, and the patient finally sinks.

In this form of the disease, the whole surface appears bloated and swollen, the eyes are closed, the eruptions covering the tongue and mouth render articulation difficult, and the scalp and face are so enormously enlarged as to present a most hideous spectacle.

The eruption begins to grow dark about the tenth day, and after a while the whole face is covered with one continuous and unbroken scab of a dark mahogany color and often nearly black. But at this stage, both upon the face and other parts of the body, the feeling of this crust is changed from the hardness which it had at an earlier period, to a wavy or fluctuating feeling under the scale; the crust becomes loose and peels off in large flakes, or is torn off in consequence of the intolerable itching, and thus presents a semi-

matter and bloody raw surface. In this stage, with the offensive fetor that accompanies the case, it is difficult to conceive of a human being, short of the dead and decomposing body, in a more loathsome and disgusting, though pitiable condition.

In this, as in the distinct variety, the high febrile excitement accompanying the first stage, in a measure subsides upon the full appearance of the eruption; but at this stage it begins to return and is often preceded by the rigors that accompany its first appearance, and in severe cases, presents the low or congestive and nervous character that most generally ensues upon such serious involvements of the vital forces; though in some instances it presents somewhat of the sthenic character of more inflammatory affections. This fever no doubt results from the influence of the poisonous matter absorbed into the circulation, and thus contaminating the whole system. This is shown very clearly from those cases of varioloid attacks, in which the primary fever is not observed to differ from the ordinary cases, but no secondary fever occurs. In this contaminated state of the blood, and the exhausted condition of the vital forces, local determination is quite liable to take place; and hence, when we may think our patient comparatively safe, and the case progressing with satisfaction in other respects, we are suddenly and unexpectedly called to encounter a local inflammation, either in the lungs, pleura, bowels, or some other important organ, which presents a very alarming state of the case, and endangers the life of the patient. Or, if it progresses without any violent outbreak of local inflammation, the vitiated condition of the system is so general and complete as to render repair of the disorganization of certain parts consequent upon the severe eruption, slow and imperfect. Thus a severe bronchial cough, which may in scrofulous constitutions terminate in true phthisis, may continue; or the ulceration of the tarsi of the eyes, resulting from the eruption, may produce a chronic ophthalmia; or opacity of the cornea, often of an incurable character, may follow from the same cause. Nor are these the only consequences of this highly vitiated state of the system, provided the patient survives the consecutive fever following the absorption of matter. Deep and sloughing sores, or extensive abscesses of the more deep-seated parts, often follow, as the method taken by the system to eliminate the virus thus diffused, and if nature is not sustained in this recuperative process, the system flags in its efforts, and finally wears out in the trial. But should the strength of the system prove paramount to the morbid

influences, and, with the aid afforded by skillful interposition, throw off the poisonous virus, and repair as far as possible the injury inflicted, the least that may be looked for, in severe cases, after the slow process of desquamation, is a series of pits nearly covering the whole surface, and frequently large eschars, resulting from the more extensive absorption in the ulcerated process, and leaving the patient at best a scarred monument of the severity of the formidable disease.

I have thus endeavored to describe to you some of the various phases of this once fearful scourge of the human family, though now like the tamed lioness when incaged. And I may remark that you will scarcely expect that every case you may meet with will answer in every particular to the description I have given. Another form of the disease, or at least a *modification*, is frequently met with, concerning which a number of erroneous notions are entertained, and which therefore requires a brief consideration. I refer to

Varioloid or Modified Small-pox.—This form of small-pox has been, and is, perhaps, at the present time, considered by some of the profession, and more especially by most of the community, as a distinct affection, and though resembling, yet in no wise connected with the real small-pox, but having a peculiar contagion of its own.

The difference between the genuine disease and the varioloid has never been pointed out, except in so far as the latter presents a milder train of symptoms. And I apprehend that the distinction is an ideal and not a real one, and that the disease is simply a modified form of variola, occurring in a system *partially protected* by the previous influence either of small-pox or vaccination. Thus an individual may have an attack of small-pox, or have what appears to be a successful vaccination, and afterward by exposure to the contagion of small-pox imbibe it, and go through all the stages of an original attack, being marked as though he had never had it; but it will generally present a milder form. Various hypotheses upon this subject have been suggested, but none are entirely satisfactory.

The most *reasonable solution* that presents itself to my mind is that which applies with equal force to the whole class of contagious diseases. It may be supposed that certain tissues of the human system are obnoxious to the influence of certain contagious poisons, as the tonsil glands in scarlet fever, the parotid glands in mumps,

etc., and that to render these glands or tissues — thus susceptible to contagious influence—free from future invasions, certain molecular changes, or if you please vital changes, in *all* the component parts of those structures must be brought about. Or in other words, the whole structure must be perfectly saturated, so to speak, with the contagious virus to render it insusceptible to future attacks. And in proportion as those changes are produced, or the tissues filled with the contagious poison, will the susceptibility to future attacks be destroyed, and just in the degree that the changes referred to are not produced will be the extent of the liability to second attacks. Hence the great diversity in the violence and extent of the varioloid disease—in some cases barely producing the initial fever, with but little or no eruption, while in others it progresses to an extent almost equal to the most malignant attacks of the variola itself; thus shading off from an attack differing in no particular from a mild case of genuine small-pox, with copious and well-defined papulous eruptions, to one which exhibits only the mildest premonitory symptoms, with a few eruptions, scattered here and there over the body, and imperfectly developed.

It may be supposed, also, that the peculiar arrangement of the molecules of the tissues, generally liable to the influence of the several contagious affections, is what produces or occasions the insusceptibility in those persons in whom certain of the contagious diseases never occur. Thus some persons without any previous protection may be exposed in the most complete manner to a malignant case of small-pox, without being in the least affected by it, and thus continue through life. Or possibly in after life, when the system has undergone the various changes attendant upon youth, maturity, and perhaps decline, the arrangement in the integral composition of the molecules of the tissues referred to, may have been slightly changed, or the vital susceptibility of the parts so altered as to render them obnoxious to its influence, requiring only a slight exposure to imbibe the disease. Facts observed justify this explanation.

The susceptibility of the system, as already intimated, seems to be modified not only in regard to partial exemption from the disease,—which is generally proportioned to the previous prophylactic influence, but also in regard to the *appearance* of the eruption. Thus in some instances the first manifestation of the eruption will be in the form of a diffused erythema, or scarlet rash, just as it sometimes occurs in the most malignant form of variola, with a

high range of initial fever; but after the appearance of the eruption the fever, as usual, subsides, and the eruption, instead of pursuing the ordinary course, gradually dries up without filling, and only here and there a well defined umbilicated pox is to be seen, without any consecutive fever at all. In other cases the vesications appear at first to fill, but shortly dry up; or having matured exhibit more the appearance of a crust, and finally fall off, without leaving the ordinary pit or mark. In other cases, again, the varioloid eruption pursues the ordinary course of the complete variola up to the period of maturation, passing through the several stages of initial fever, eruption, vesication, and finally the umbilicated variola, and then dries up in a much shorter period than genuine cases of small-pox, without the usual symptoms that follow that stage, thus gaining from two to four days, and saving to the patient the other unpleasant symptoms.

The varioloid thus being milder, and generally failing to present that extended and complete maturation, is mostly wanting in the characteristic odor so generally peculiar to the unmitigated form of small-pox. Thus varioloid may be said to differ in many cases from variola by the absence of the peculiar odor and the shorter duration of the eruption in the former. But it need not be said that cases are frequently met with, which, although they exhibit every evidence of previous partial protection, such as the genuine vaccine mark, etc., yet have nothing to distinguish them from original cases of small-pox; thus confirming the identity of the two affections. If further evidence is needed upon this point, the fact, now generally conceded, that the lightest case of the varioloid may produce, in an unprotected person, the genuine small-pox, and, if circumstances are favorable, in its most malignant form, shows beyond any room for doubt that the cause of the two affections is identical.

From what I have already said in relation to varioloid, you would naturally infer that it rarely proves fatal, at least, much less frequently than small-pox. And from the less violent character which it assumes and especially from the course it often takes of disappearing before it is perfected, or without passing completely through the several stages, it is much less liable to produce the marks common to small-pox.

The authorities mention a circumstance, said to occur both in connection with small-pox and other contagious affections, which I do not recollect ever to have observed, viz.: the modification of

one contagious disease by the existence of another of a different character. Thus, it is said, a patient may have the commencement of variola, and, by the development of measles, the progress of the small-pox is arrested until after the measles have disappeared, when the variola revives and goes through its regular course. The statement in my opinion needs confirmation. I should not doubt that the variolous poison, imbibed after the individual had been exposed to measles, might lay dormant in the system longer than the ordinary period for the development of its symptoms, and thus allow the measles to pass regularly through their several stages and disappear before the latent poison was brought into action.

Morbid Anatomy.—The only striking characteristics in the morbid anatomy of variola are shown in the skin and mucous membrane, though other parts and organs often become affected in the progress of the disease, but not in any way necessarily connected peculiarly with this disease. If all the morbid appearances found in fatal cases of small-pox were ascribed to that affection, as necessary attendants upon it, the disease of the lungs, brain, liver, and almost every organ of the body, would have to be described in this connection. Among the changes not common to most other affections, is the inflamed or injected condition of the inner coats of the arteries, though, as this is common to those diseases in which the morbid condition of the blood plays an important part, it is not considered peculiar to small-pox. In this, as in many other diseases of a malignant and putrid character, the blood generally exhibits less of the important vital elements than is usual. The fibrin is found mostly diminished in quantity, and the clot presents more of a glutinous and soft appearance than in health.

The structure of the pustule is interesting, more especially in a diagnostic point of view, than from its morbid character. When filled before the ulcerative process has disturbed it, the pustule has a decidedly cellular character, and when punctured does not collapse, or scarcely diminish in the least, but a very small amount of a limpid, transparent serous fluid very slowly exudes. But if the ulcerative process takes place before the serous exudation becomes inspissated and forms a dry scab, the cellular character of the pustule is changed, and the pustule then exhibits a whitish yellow and saculated appearance, and will completely collapse upon being punctured. Whether the scab does thus dry or not, a deeper ulcerative process takes place at the bottom of the vesicle that involves the true skin, and in this way leaves a small

cicatrix. The conjunctiva, the mucous membrane of the nose, and the fauces, all show marks of the inflamed action in the pustulation that had taken place, though none of those ulcerative evidences which are left on the skin are here manifest. The epithelial membrane, however, is destroyed in some places, and the mucous membrane beneath often exhibits decided marks of diseased action, in some cases serous infiltration, and enlarged mucous follicles. This is more or less the case through the mucous membrane of the stomach and bowels.

Cause.—Little need be said on the subject of the cause of this affection, as it is universally admitted to be produced by a specific contagion. This is more specially the case with variola than with any of the other contagious diseases. Without previous protection from vaccination or inoculation from the small-pox, few persons would escape an attack of the disease. The influences referred, or some other recondite and inexplicable cause, seem to protect, here and there, an individual from the contagion of small-pox, and they pass through life often exposed to it, but never attacked. These cases, however, are very rare, and are exceptions to the general rule. The virus affects, to a certain extent, all the fluids of the system, and especially the blood, as is shown by the fetus in utero becoming diseased when the mother is affected. It has been said that even the child in utero may have it by free exposure of the mother, when, at the same time, she being protected, would not feel its influence. This may well be questioned. There is no doubt, however, that if the mother was mainly protected, but susceptible to the contagion in a slight degree, it might be thus communicated to the unborn child.

The poison can be communicated by inoculation, and also through the atmosphere at a certain distance, but to what precise distance has not been determined, if indeed it can be. But I am well satisfied that much of error has been entertained on this subject, if not among the profession, at least by the community. I do not recollect an instance where it has been communicated to those living in adjoining houses, nor to a person passing in the street by a house infected. But the community is so generally protected at the present time that I am free to admit such cases are no fair tests, and occasions for making a test of the kind can rarely occur. There can be no doubt that the contagion can be communicated by being attached to clothing. But it may be safely doubted whether it can be communicated where the clothing has not been in actual

contact with the poison, or when it has afterward been exposed to the air. I have myself, in numbers of instances, assisted in moving patients affected with the disease in its most malignant types, and, using no other precaution than simply washing my hands, have mingled freely with the community without ever conveying it; nor have I any knowledge of its ever having been thus conveyed. The distance at which it may be communicated in the atmosphere differs, I have no doubt, according to the quantity in the atmosphere, and must depend somewhat upon the current of the air from the infected region.

In this affection one attack is, perhaps, more protective than in most other contagious diseases. The principle is that the disease is taken but once, and any variation is simply an exception. Still cases do occasionally occur where individuals have it the second time, and according to my experience more have it the second time after inoculation, than after it has come on in the "natural way." Small-pox occasionally prevails as an epidemic, and hence the question has arisen whether it is not capable of being propagated in some other way than by direct communication. This, however, should by no means be inferred until it can be shown that cases have had their origin in that way. There can be no doubt that certain conditions of the atmosphere are favorably to its general prevalence. But in the present state of our knowledge it is impossible to determine in what that peculiarity of the atmosphere consists, whereby it holds in solution a principle of a particular character, which gives caste to a disease and thus constitutes an epidemic. Though it can not originate from epidemic influences, there is no doubt that an epidemic prevalence has more to do in modifying or giving character to the disease than any influence it may receive from the origin of the poison.

Diagnosis.—A fully developed case of small-pox generally offers no difficulty in determining its character; though a thorough case of chicken-pox might readily be mistaken for a mild attack of the former. The great similarity of the eruption in chicken-pox, in nearly all its stages, would be very likely to mislead the most experienced person, without more than a mere examination of its appearance, especially if the two diseases were prevailing at the same time. But the character of the two eruptions, when carefully examined, is sufficient to decide the question. The vesicle in small-pox is decidedly cellular, and when punctured does not collapse, nor in the least diminish in size, so far as can be observed,

and a small amount of fluid gradually exudes; while a similar puncture of a varicella vesicle shows a more sacculated character of the eruption, and consequently the vesicle diminishes, and the amount of fluid is much larger. The severity of the pain in the back, which is felt before the appearance of the eruption, extending down into the limbs, and excelling any thing of the kind I have ever witnessed in fevers, has always with me created the suspicion of small-pox. In the early stage of the eruption, it is sometimes difficult to distinguish the variola eruption, from febrile lichen; but the history of the febrile stage will generally suffice to determine the difference, as the latter has a much shorter period of fever than the former. Those who are familiar with measles will have no difficulty in distinguishing that disease from small-pox, not only from the history of the case, but also from the appearance of the eruption. There are no characteristics by which to certainly distinguish the modifications of this affection; but the evidences of previous vaccination or variola will generally be a guide to an intelligible diagnosis of genuine small-pox and varioloid.

Prognosis.—Few cases of uncomplicated attacks of small-pox, unless maltreated by untimely and harsh interference with drastic and inappropriate medicines, should prove fatal. Yet many cases of the severe confluent form of the disease, in the present state of our knowledge, do terminate unfavorably. But these compared with the whole number of cases bear but a small proportion, and hence in determining the average we are led to conclude that the prognosis should be put down as favorable. Yet in looking forward to the favorable termination of any case, many circumstances are to be taken into consideration. Thus a person of sound constitution, and free from a tendency to local determination, would be more likely to pass through a severe attack of small-pox than an individual of a different constitution. A scrofulous subject, or one with a strong predisposition to gastro-intestinal irritation, would be far more liable to fatal results in this disease than others exempt from these tendencies.

The cases which commence with torturing pains in the back, and are accompanied with a rapid pulse and cold extremities, may always be looked upon as very violent cases, presenting cause for alarm, whatever may be the character of the constitution. The existence of the confluent and diffused eruption, presenting the appearance of an erythema, may always be regarded as indicating a degree of violence which renders the issue uncertain. When

the case commences with violent convulsions, it may generally be considered an unfavorable symptom, though in children this may occur in cases that do not otherwise present any untoward appearances, and which may go through without any difficulty. The complications of local determination, such as pleurisy or pneumonia, may always be considered as unfavorable, though by no means necessarily fatal. Small-pox is most likely to prove fatal in young children, or persons greatly advanced in life, though many cases of either extreme have passed through tolerably severe attacks and recovered. But most of the cases which present a congestive and malignant aspect, in the beginning, prove fatal.

LECTURE LXXVII.

CONTAGIOUS DISEASES—CONTINUED.

Variola Continued : Treatment ; Prevention of Pitting ; Prophylactic Measures. Vaccine Disease : Character ; Origin ; Experiments of Dr. Martin ; Author's Experiments ; Symptoms of Genuine Kine-pox ; Difference of Susceptibility ; Protective Influence ; Best time for Vaccination ; Importance of Healthy Matter ; Mode of Vaccination ; Revaccination.

VARIOLA OR SMALL-POX — CONTINUED.

Treatment.—In the uncomplicated form of small-pox, very little treatment can be instituted with any show of sound philosophy. No knowledge we now possess of the nature of the disease will enable us to arrest it, or to shorten the several stages of its progress. And as we lay no claim to a remedy that shall neutralize the poison or eliminate it from the system, all we can reasonably be expected to do is to watch the progress of the case, detect any local determination that may take place, and with such appliances as the circumstances will justify endeavor to stay its progress or divert its further local determination ; while we prevent untimely and improper interference, and make use of those general measures calculated to render the patient comfortable, and as free from suffering as may be.

The disease is not produced by morbid accumulations in the stomach and bowels, and therefore no remedies should be indiscriminately administered with a view of removing them. But if the history and symptoms of the case show the existence of imperfectly digested food, or morbid secretions either in the stomach or bowels, they should be removed with the least disturbance and irritation. A mild emetic would answer if the stomach was found loaded. If the patient was found vomiting bilious and morbid matter, nature should be assisted by some mild means to do at once what she was doing slowly, and do completely what she might but imperfectly accomplish. For this purpose, drinking freely of a warm infusion of boneset will answer ; but if it should not, resort

may be had to other more efficient means. In a mild case, if the bowels are not sufficiently free they may be opened with an injection; or if there is evidence of an impacted colon, or vitiated accumulations, they may be moved by a mild cathartic, being certain, however, to avoid any of a drastic character. The seidlitz powders are a cooling physic, and operate generally with as much mildness as almost any one of this class. Or if the stomach is irritable small doses of the neutralizing physic may be given until it operates moderately on the bowels.

But as we often find the bowels sufficiently free, and the stomach manifesting great irritability without accumulations, soothing drinks, such as the marsh-mallows infusion, a sinapism to the stomach, and about one-twelfth of a grain of morphia, repeated in two hours, will be all that is necessary or proper for such cases. The more violent cases, accompanied with the distracting pain in the back, should be freely cupped over the spine in the region of the pain, and about ten grains of the diaphoretic powder should be given once in two hours until the patient is relieved. After the cupping, if the skin is hot, with no inclination to chills, a towel folded four thicknesses should be wrung out of cold water and applied to the back; and the bowels should be kept sufficiently free, during the progress of the case, to secure the system against any embarrassment from that source. Meantime the skin should be frequently sponged with warm broke-water and whisky; the room should be thoroughly ventilated and kept so from the beginning to the end of the attack; and if the skin is hot and other febrile symptoms are present, a solution of acetate of potash, in about the proportion of ten grains to the ounce, should be given in teaspoonful doses every hour or two, more with a view to satisfy the patient that something was being done, than from the expectation of any particular benefit, though it acts slightly on the kidneys, and also as a mild refrigerant diaphoretic. The diet should be of the most simple kind, allowing nothing more solid than rice, gruel or arrow-root, and these in small quantities. For drink nothing will be found more acceptable than the mucilage of marsh-mallows, or cold water in small quantities. These, then, are the main and most reliable measures that I have had any experience with, and they should be repeated in whole or in part, as the present symptoms, or the circumstances of the case, seem to indicate. But be sure that no medicine is given without a necessity or some well-

defined indication for its use; recollecting that it is better to do nothing, than to attempt to do something which you are not clear is right or required.

During the progress of the case, some local determination may occur that may require the use of some of the measures appropriate in such complications in other conditions of system. If it be pleurisy, cups should be freely applied to the seat of the pain, followed with hot fomentations and repeated frequently, if necessary to relieve the pain and subdue the inflammation. The same measure should be employed in other forms of local determination, with more or less efficiency, as the urgency of the case seems to demand. In the advanced stage of the disease, after the eruption is fully filled, and extensive maturation is taking place, rather more nourishment should be allowed; though great care is necessary not to allow too much. If the strength is greatly reduced, a small portion of beef tea and wine whey, or buttermilk, may be allowed, or a little thickened milk, if the patient has been used to it; while the surface should be more freely sponged or cleansed than in the early stage before the appearance of the eruption, or after it has come out. The simple nourishment prescribed for the latter stage of severe cases will not be sufficient to answer the requirements of the case. Here it may be necessary, from the state of prostration, and the embarrassing influence of the poison on the vital forces of the system, to administer more efficient restoratives than those I have directed. I have in a number of cases given diluted ale with apparent advantage, at least with comfort to the patient, and without any unfavorable results as far as could be determined. It may be given, diluted with equal parts of cold water,—a little sugar being added,—in tablespoonful doses, or even more, once an hour. It must be confessed, however, that most of these severe cases of extensive suppuration will, before the poison is thrown off and the breach in the continuity of the tissues repaired, sink under their exhausting influences, in spite of the generous restoratives that may be used. Nevertheless, cases of the kind do occasionally get well, and we are, therefore, justified in using those measures best calculated to sustain the system in the unequal conflict, even though in most instances it shall prove unavailing. In this condition of the system, great care should be taken to have the room constantly ventilated, and the eyes, face, and mouth frequently washed with milk and water; or a linen wet in a decoction of hydrastis, and kept constantly moist over the eyes and parts of the

face most involved, will be found to afford great relief; while the patient's clothes and sheets should be changed at least once a day, in order to guard, as much as possible, against the poisonous and enervating influence of the contaminated atmosphere about him.

It is often a matter of great consideration to prevent the unpleasant deformities that mostly follow severe attacks of the kind, and to effect which various measures have been recommended and resorted to with variable success, by different members of the profession. But I believe no concurrent practice has yet been agreed on as even generally successful in answering the end desired. Some of the many expedients that have been employed to diminish the pitting may be briefly mentioned.

Open the pustules, press out the lymph or purulent matter and then bathe the surface with warm milk and water, infusion of poppy-heads, etc.

Another method is cauterization of each pock with nitrate of silver, by introducing the caustic through an opening made in the vesicle. This should be done as soon as the vesicle is formed. This is a very tedious method, though it is said to have been very successful in some cases.

Apply sulphur ointment to the entire face three or four times daily, commencing as soon as the eruption begins to become prominent.

Dr. Crawford of Montreal, and Dr. Jackson of Philadelphia, have both employed the tincture of iodine as a wash to produce a portion of the small-pox eruption. Dr. Jackson's treatment is thus stated by himself: "In April, 1845, I was led to make an experiment of aborting small-pox by the tincture of iodine, from contemplating its wonderful influence over erysipelas. I applied it to one arm of a child eleven months old, in confluent small-pox, on the third day of the eruption, and to the arm which appeared the worst, rubbing it freely on with a sponge three times that day and twice the next. On the eleventh day, when the pocks over the whole body were at their height, elevated with hard bases, those of the medicated arm were entirely flat, with thin, purulent matter under the dead cuticle, without any swelling of the part. In this state was the disease when I showed the case to Drs. Bond and Nancrede, who agreed with me that there was a complete abortion. There are, however, some very slight pits now to be seen, but they are very inconsiderable when compared with those on the other arm.

"I have not had an opportunity of repeating the experiment, for during the late epidemic I saw nothing but varioloid, and that so slight that no trial could be made. I mentioned the child's case to a number of physicians, but I do not know that any of them tried the medicine, except Drs. Goddard and Sargent, whose written reports I send you.

"Dr. Sargent used the iodine on one side of the face in 25 cases—'the swelling, soreness, and tenderness were very much less than on the side not covered; each pock remained flattened, but I can not say that it prevented pitting.'

"Dr. Goddard writes that he had tried the medicine in five cases—'not one of the patients shows the least pit or mark; none of them had been vaccinated; and the disease was confluent in most of them.'

"Dr. Sargent's experiments are not as favorable as Dr. Goddard's and my own—possibly from using a feebler medicine. That which I used was taken from my own closet, made by myself.

"One advantage of this treatment is, that it removes the cuticle and leaves the part free from those disgusting discolorations which commonly remain for months.

"It might be well to consider how far it would be prudent to extend the application over the body, in order to mitigate the disease, in malignant or even in severe cases. No fair trial can be had without applying it on the first day of the eruption and continuing it for several days, say five or six.

"I have found the same medicine an admirable remedy in the irritable ulcer with an inflamed surface, and erysipelatoid margins. It soon kills the cuticle, and with this the whole inflammation disappears, when a little lunar caustic to the ulcer disposes it to granulate."

[I have employed the tincture of iodine with some success; but I have derived more satisfaction from the use of tincture of muriate of iron frequently applied, commencing on the first appearance of the eruption. My colleague, Prof. King, recommends keeping the face covered with a piece of black oiled-silk, in which openings are cut for the nostrils and mouth. This should be removed two or three times a day, long enough to apply sweet-oil to the entire surface, and immediately replaced. The light of the sun should be excluded from the apartment as far as practicable, consistent with free ventilation. This I know to be good practice.

S.]

But the most important matter connected with small-pox, whether in a historical point of view, or in relation to its treatment, is the *prophylactic measures* that have been instituted to stay its ravages and deprive it of its terrors. Up to the latter part of the last century, inoculation with small-pox matter was the only known method of preventing, or more properly of modifying, this most pestilential disease. This method has been known and practiced from the time beyond which medical history, on this point, does not run. It was, unquestionably, an important step in the progress of medical improvement, depriving small-pox, as it did, of more than half its terrors. Yet it can scarcely be compared, in its advantages, to the more modern discovery of vaccination, which has not only robbed the disease of its terrors, but rendered it comparatively harmless. But when vaccine matter can not be obtained, no one should hesitate for a moment to resort to inoculation, where small-pox was prevailing, as a far safer method of going through an attack of the disease. Although it has, in the regular time, all the characteristics of the original and genuine disease;—the regular initial fever, the ordinary eruption, the peculiar umbilicated vesication, and finally, the true small-pox scab;—yet it generally passes through the several stages with less severity and suffering, and in nearly all cases with safety. The secondary fever, if there is any at all, is but slight, though it may be considerable in the more severe cases, which are attended by a pretty full crop of eruptions; this, however, is rare. Inoculation is performed in the same way as vaccination, by inserting under the skin, slightly punctured, a small portion of the matter dried on the point of a quill, or by dissolving in the puncture a small particle of a dried scale. On the third or fourth day after its insertion, a slight stinging sensation is felt at the point of the puncture; and on the fifth day a small, hard elevation, and a slight vesicle, may be discovered on examination. The vesicle has the characteristic appearance,—flattened at the center, with a red or inflamed areola around it, and it finally goes on to maturation. About the seventh or eighth day, the patient feels rigors, alternated with flashes of heat, pain in the back, and followed by a decided fever. On the ninth or tenth day, a variolous eruption appears on different parts of the body; sometimes pretty copious but distinct; sometimes very few pocks appear, and these more rapidly dry up and fall off than natural; but they mostly pass through the several stages, as in the distinct variety. Meantime, the origi-

nal or parent pustule has increased, and on the eleventh or twelfth day, is surrounded by an irregular and inflamed base, with considerable swelling and pain in the arm, until an escape of the matter relieves it.

It is by no means certain, however, when you are inserting the variolous poison, that you are not taking the first step toward the fatal result of the ease, as inoculated small-pox does occasionally prove fatal. It is this uncertainty that has always rendered small-pox inoculation a terror to all who are under the necessity of submitting to it, though it is much milder and safer than the disease in the natural way. But the necessity of resorting to it is of rare occurrence, since the discovery of vaccination made by the immortal JENNER in 1798.

VACCINE DISEASE, OR KINE-POX, COW-POX, ETC.

This is an entirely artificial disease, discovered and introduced for the prevention of that "pestilence that walketh in darkness," and as a substitute for its modified form; rendering the system, when the variola is fully imbibed, safe from the invasion of its more formidable and fatal prototype. The various terms used to designate it all have their origin from the name of the animal whence the affection first emanated. It does not detract from the fame of Dr. Jenner that he did not first discover the fact that a certain kind of sore, found upon the udder of a cow, produced a similar infection upon the hands and arms of those who milked them, and thus rendered such persons proof against attacks of small-pox. These facts were well known, and frequently acted on, previous to the time of Dr. Jenner; though up to his time the same disease had not been transmitted from one person to another, and thus indefinitely continued. It is, therefore, due to him that those who either speak of, or write upon, the subject of vaccination, should repeat the important truth, that Dr. Jenner conceived the thought that this most fatal scourge of mankind could be prevented by a perpetual propagation from one individual to another, of a harmless disease, having its origin in the cow. It was a happy thought.

The disease from which kine-pox matter originates appears to produce considerable effect upon the animal when laboring under it. The secretion of milk is suspended; the animal is thirsty, refuses to eat, and exhibits every evidence of serious indisposition at about the usual period for the genuine vaccine disease; while

the local disease goes through the several stages of pimple, vesication, maturation and scab; with the umbilicated appearance, in about the ordinary periods peculiar to each stage. It seemed to have been the opinion of Dr. Jenner that the disease observed in the cow was communicated to that animal by the hostlers, from a disease of the horse known as the *grease*. But more modern observations and experiments, beside all analogy, have clearly determined its origin to be small-pox itself, modified by passing through the system of another species of animal. Thus, in a number of well attested instances, both the vaccine matter and the scab have been obtained by inoculating a cow; while the phenomena of the operation, in the different stages of the inoculation, show the identity first observed in the diseases. I will not detain you by reciting the details of the various experiments which have been tried, but will barely read you the account of an experiment by Dr. J. C. Martin, of Attleborough, Mass., which I find in the Boston Journal:

“SIR: The following experiments may not be uninteresting to you. They were undertaken for the public good and the benefit of science. And although I have suffered severely in mind and purse for making them, yet I am not sorry that the act has been committed; and all that I regret is that I am not located in a community, and surrounded by medical men, who can duly appreciate my motives, and encourage me in prosecuting a series of experiments which I feel convinced might lead to successful and happy results.

“A case of small-pox, in its worst form, having appeared in Attleborough, where I reside, and having myself, like many other physicians, failed in obtaining fresh and pure vaccine virus, and having, moreover, witnessed and read of the frequent failures of the vaccine disease, as an antidote to attacks of small-pox, I became exceedingly desirous of obtaining the virus directly from the cow. It is true that the source of the cow-pox virus is, and always has been, a matter of theory. Jenner, in his time, and many physicians of later times, imagined, and supposed themselves to have proved, that pure vaccine matter was the result of the action of small-pox in the cow. I have been anxious to determine this point,—so that should the theory prove to be true, physicians of this country might have it in their power at all times to obtain matter which would prove to be a more perfect prophylactic against variolous poison, than that which they are now obliged to use.

“In order to test the theory fairly, I purchased a fat, healthy

cow, eight years old, shut her in a stable, and fed her scantily for a few days. I then obtained some variolous matter from the individual who was sick with the small-pox, and who had been laboring under the disease eleven days. With this matter I inoculated the cow on the 2d day of October, 1835, in the following manner. I made, with a common lancet, fourteen or fifteen punctures in one of her teats between the cuticle and true skin, taking care not to draw blood. I then inserted into these various punctures quills charged with the variolous virus. The wounds soon disappeared, and presented no appearance of being variolated until five days. On the *fifth* day the animal seemed to show some indisposition, and on examining her teat I discovered one small elevated spot at the point of insertion of one of the quills, and an evident febrile heat in the teat, when compared with those not inoculated. This increased febrile heat continued for about forty-eight hours, and then subsided. During this time the animal lost her appetite, became thirsty, her milk ceased to be secreted, and her teat began to swell.

"On the *eighth* and *ninth* days a regular pustule was formed at the point inoculated, the margin of which contained some thin, light straw-colored fluid. On the *tenth* day the pustule had increased in size and become more prominent, and was distended with matter. At this period it was not regularly round, but presented an uneven surface. On the *eleventh* day an evident change had taken place in the appearance of the pustule, it having begun suddenly to dry up. On the *thirteenth* day the virus had become solid, so that the pustule was converted into a crust, or scab, of a dark brown color.

"Besides introducing the small-pox virus into the udder, I inserted some also into a puncture which I made on the hip of the animal. This resulted in a sore, and in the falling off of the hair. This inoculation produced no pustule or eruption, save at the point of insertion, so far as I could discover.

"I now determined to insert some of this new generated matter into the human system, and observe its effects. Accordingly, I selected a healthy boy, aged ten years, for the subject of my first experiment; and on the evening of the 12th day of October (the day I took some virus from the cow, being the tenth day of the existence of the pustule), I inserted some of this virus into the boy's arm in the same manner as in practicing common vaccination. The symptoms resulting from the operation were the following: The virus lay dormant four days. On the *fifth* day a

slight inflammation or red spot arose around the point of insertion. From this period the vesicle ran its course, like the common vaccine vesicle, was characterized by a well-formed and regular areola, and in due time was transformed into a perfectly round, mahogany-colored scab. The boy exhibited but little indisposition during the course of the disease, except headache, and he continued to play with his fellows about the street, and I saw no symptoms in his case which do not attend the vaccine disease in its various stages. It should be mentioned, however, that two or three small pimples appeared on the boy's face and arm. These did not fill, but soon dried and disappeared.

"While observing the rise and progress of this disease, I had no doubt that the eruption was like, and that it was, the true and perfect vaccine vesicle. In order that I might not be deceived, however, I took the boy to Providence, and exhibited his arm to two physicians of that place, Drs. Toby and Brownell, both of whom pronounced the eruption to be the perfect vaccine, and gave me their opinion in writing to this effect. Having satisfied myself of the nature of the eruption produced in the boy's arm, I took matter from it on the *seventh* day, and inserted some of it into the arm of my own child, which was five months old. On the *fourth* day a red spot appeared around the point of insertion, a vesicle was formed and observed the same course, and presented the same appearances, as did that on the boy's arm, from which the virus was taken. The areola, perhaps, was not quite so regular as in the case of the boy,—and the febrile excitement was greater in the child, which I attributed to its natural irritability of temperament. There were in this case a number of secondary eruptions on the surface, resulting from the vaccination.

"The *third* subject vaccinated was also an infant. This child I vaccinated with matter from my child's arm on the seventh day of the disease. This child's symptoms were similar to those presented by my own child; they were, perhaps, rather more severe. The areola was not so perfect, and there appeared on it a greater number of secondary vesicles which became filled with fluid. The *fourth* individual vaccinated, was a boy four years old. The virus with which I vaccinated him was taken from the arm of the child whose case I last described. The symptoms attending this case were similar to those presented in the preceding one, except that they were more severe. The areola, however, was not so regular, and the vesicle was rather more imperfect, and a greater

number of secondary eruptions presented themselves on the body, some of which filled and formed crusts.

"I will not trouble you further in describing cases. The whole number of persons I have vaccinated was twenty-three, and the cases above described will give you a notion of the character and progress of the others. I will remark, however, that I think the last individual vaccinated had the disease more severely, as the matter used in producing it was more remotely related to the cow.

"Such have been the results of my experiments, and I should feel highly gratified and honored with your opinion respecting them.

J. C. MARTIN."

From a number of experiments performed by myself, I am very well convinced that vaccine matter can not be regenerated or renewed by vaccinating the cow. I found in two instances, in which I inserted pure vaccine matter into the udder of a cow, that it was much longer in developing, though when it did come forward, it went through the several stages, and presented the physical appearance of a true vaccine scab, except in the color, which was much lighter. And though I inserted it carefully in more than a dozen instances, yet not the least effect was ever produced by it. In short, the second process seemed to have ended the race by producing a "mule."

The symptoms of a genuine or successful vaccination are somewhat peculiar, and worthy to be considered, though they require no medication for their relief. In the first place, the mode of inserting the matter is of some importance, though any method will answer which is uniformly successful. I have usually made a shallow puncture barely through the cuticle, not so deep as to bleed much, though in very young children it is often difficult to perfect it without more bleeding than is desirable—in which case the matter should not be inserted until after it has ceased. Then the matter, if the scab is used, after being dissolved in a drop of water, should be inserted on the point of a lancet, by placing the instrument carefully into the puncture, and lightly raising up the lip of the cut, when, by the vacuum thus made, the matter is forced from the lance under the skin. Or the point of a goose quill, previously charged with fresh matter, may be inserted into the puncture made as before, and allowed to remain until it is dissolved, when enough is very apt to be washed off to have the desired effect. Directly after the matter is inserted there is a slight swelling, resembling the sting of a bee, though not so large,

which soon however disappears, and the simple mark of the puncture remains for about three or four days, when a small pimple will be observed. By the fifth or sixth day after the insertion, a small vesicle will be visible, which is, or soon becomes, slightly flattened at the top, and very soon presents a small circular redness around the base. By the eighth day, and sometimes by the seventh, the vesicle is well formed, with a perfectly umbilicated center, a rounded, swelled appearance of the circumference, and a circular and decidedly inflamed areola of variable size. This gradually increases until the vesicle has changed to something of a scab though not yet dry, or until about the tenth or eleventh day. In its most perfect and complete state, the pock is from one-fourth to half an inch in diameter, and when through its several stages has a dark mahogany color. At the period of its vesication, and upon the appearance of the areola, a feeling of tension and burning is experienced in the pock, accompanied by a slight constitutional disturbance, which is manifested in children by their being restless and fretful. By the twelfth day after the insertion, the matter contained in the pock is opaque and thick like pus, and the areola begins to fade and disappear; and by the fourteenth day the scab is dry, and can be taken off without much pain, though a small amount of matter will be found attached to its under surface, and at the bottom of the sore. But, upon healing, numerous small pits are left, resulting probably from the cellular character of the eruption.

This, then, is the general course, and these the most prominent symptoms of an ordinary case of vaccine disease; but it will be found to differ in many respects according to the constitution and temperament of the individual affected. The course of the disease in most instances is as described, though the constitutional symptoms will be found to vary. In some instances one or two other pocks, not having all the characteristics, but answering in the main to those described, will make their appearance. In constitutions highly scrofulous, I have known protracted and troublesome eruptions follow vaccination, which can be relieved only by a long course of alterative medicines, though I have no doubt they are of great advantage to the future health of the subject. It may sometimes differ in the stage of inoculation, remaining dormant for a longer period than usual, but at length coming up and going through the regular course. And there is a great difference in the extent of the local disease; in some cases, only a

very slight areola will be observed, while in others it is much larger than usual. In some instances an extensive inflammation seems to take the place of the slight tumefaction and areola peculiar to the regular disease, and considerable constitutional excitement will be connected with it, and at length a large smooth scar will be left, that has none of the genuine characteristics; and subsequent vaccination, or exposure to the small-pox, will prove that it was not protective against the disease. This is no doubt owing to the imperfect or spurious quality of the matter; though it may be in part referable to the early inflammatory action locally excited superseding the genuine vaccine irritation, and thereby subverting the protective influence usually realized. The vesicle of a pure vaccine pock is quite firm, and not very readily lacerated; while that of the spurious kind is the reverse of this and easily torn, very few of such cases going through without being disturbed.

What has been said in regard to the physical character of the vesicle of small-pox applies almost precisely to the vaccine vesicle. The central depression is no doubt owing to an imperfect development of the characteristic cells of the true vesicle, produced by the adhesive inflammation that takes place at an early stage in the progress of development, and as a consequence of this a minute portion of pus is formed that does not contain the genuine virus. But the other portion of the eruption, when carefully examined, is found to be made up of minute double or concentric rows of cells, of a shining appearance, and filled with a limpid fluid. In removing the scale before it is dried, it is found isolated from the skin all through its under surface, except at the center, where the adhesive inflammation binds it to the true skin with very considerable firmness. The genuine vaccine matter contained in these cells is limpid and viscid, and does not lose its transparency when dried, as may be seen by charging the point of a quill while in this state, but is readily dissolved in water, and can be kept for some time without losing its qualities, though they seem to be affected or destroyed by heat. It is most probable that the yellow or pus-like appearance which the dissolved scale exhibits after it has been dried, is owing to the formation of matter during some stage of the process and its mixture with the true transparent vaccine fluid. The precise time during which the matter, when not exposed to heat or cold, may be kept without decomposing, has not been very satisfactorily determined, though it of course depends much upon the methods, used to preserve it. It was

formerly found to be a very difficult matter to preserve it long enough to send to China, even in hermetically sealed vials, though the attempt was finally successful. An experiment is related in the Boston M. and S. Journal of closely wrapping the scale in a small lock of cotton, then dipping it in a solution of gun cotton, and, upon drying, repeating the process until a firm covering was formed. By this means its properties were retained without loss from January to September, a period of nine months—much longer than I have ever been able to preserve it by any other method.

The *susceptibility* to the vaccine infection differs in different persons; though, as a general rule, the insertion of the matter under the cuticle with sufficient care, secures its influence upon the system. But we occasionally meet with persons upon whom it produces no effect, however appropriately or frequently it may be performed. Such systems would, no doubt, be equally insusceptible to the influence of small-pox; though in such cases it is always advisable to make the experiment frequently, for fear of a change in the susceptibility of the system, when an exposure to genuine variola might unexpectedly prove it. It is a safe and easy test, and ought never to be long neglected. There are other systems very slightly susceptible, in which the insertion of the vaccine matter produces, in the first experiment, only an imperfectly developed vesicle, with a slight local irritation, but which seems to answer the purpose, as no subsequent trials make the least impression, however faithfully performed; though the want of the characteristic local and general influences, usually attendant upon a successful vaccination, can not fail to create some fear in the minds of duly cautious persons that the experiment is not sufficiently protective, and thus induce them to further trials. The existence of other active and acute affections seem to destroy the susceptibility to the infection for the time being, preventing any local effect from even the purest matter. But the existence of other eruptive affections not of an acute character does not appear to essentially change the character of the vaccine disease, or interfere with its prophylactic influence. And if the matter is inserted so as to have the period for its influence occur at the time for the active stage of some other contagious eruptive affection, it is always retarded, or lies dormant until the other declines, when it comes forward and pursues its regular course. But it is not so with some other contagious diseases, hooping-cough for instance, as the system seems equally susceptible to the impression of the vaccine

operation during the most active stage of that disease, and it has been recommended to insert the virus in such cases with a view of modifying the severity of that affection. But I am well convinced from repeated trials that it has no such effect.

Protective Influence.—The protective influence of vaccination has been variously estimated both by the profession and the community at large. A greater difference of opinion has lately been manifested than formerly existed, owing to the increased number of cases of varioloid, which have recently occurred in individuals previously vaccinated. Whether this is referable to any deterioration of the matter from its long continued repetition in systems greatly contaminated with other morbid elements, or whether these cases are produced by the influence of epidemic conditions of the atmosphere occurring in latter years more than formerly, is not readily determined. Another popular reason has been advanced to account for it, predicated upon the well known physiological law of change in the component elements of the constitution once in seven or eight years; it being supposed that as the whole system is entirely transformed and new matter replaced, a similar change is effected in the susceptibilities of the tissues. Without stopping to show the utter fallacy of this opinion, I will simply remark, that the same principle would apply in every particular to small-pox, and to all the other contagious diseases; and I believe the permanency of the influence of these affections in preventing second attacks, as a general rule, has never been seriously questioned. Taking into consideration the amount of spurious matter frequently used and relied on for vaccination, I very much doubt whether second attacks of genuine small-pox are not as frequent as cases of small-pox after successful vaccination. But I have no doubt that varioloid occurs quite as frequently in those who have had the small-pox by inoculation, as in those who have been successfully vaccinated. As I have heretofore intimated, every case of pretended vaccination, attested by a large scar on the arm, should by no means be taken for a successful case of the kind, as there is no doubt that the matter frequently used is either entirely spurious, or so much so as but imperfectly to protect the system, if indeed it has any protective qualities whatever.

I can not permit myself to doubt that many individuals are so far protected by vaccination as to be free from the susceptibility to variola under ordinary circumstances of exposure; while the same persons would find themselves liable to slight attacks of the

disease during the prevalence of a general epidemic influence, favorable to the occurrence of small-pox. In fact, few systems are so entirely free from the influence of a contagious disease, as not to feel, more or less, the symptoms of a prevailing disease of the kind when much exposed. It may not be in a degree sufficient to manifest unequivocal appearances of the specific disease, but enough to show the epidemic prevalence. The more frequent exemption of children from varioloid is not, I think, referable to the strength of the protection afforded by more recent vaccination; nor is the more frequent occurrence of varioloid in persons further advanced in life owing to the wearing out of the vaccine protection, but to the greater exposure to the cause of the disease in the latter than in the former case. These I take to be sound views, sustained by the facts so far as they are known.

When we observe only here and there a case of varioloid or small-pox in whole communities, or a single case in a large family, where all are exposed during the prevalence of an epidemic favorable to the occurrence of small-pox, and in which the old and young and middle-aged rely almost exclusively upon vaccination for their protection, can we for a moment doubt that the rule is that vaccination is protection, and the occurrence of varioloid the exception? When we see thousands of individuals living all their lives with entire impunity, and without any other protection than vaccination, although they are frequently exposed to the direct influence of small-pox in its most malignant form, can we entertain the suspicion that the protective influence ever wears out? Is it not more reasonable to suppose that, where the varioloid does occur in a system previously vaccinated, it is owing to an original deficiency in the extent of the vaccination, rather than to any influence the lapse of time may have had on the protective property of the prophylactic.

The protective influence of vaccination after exposure to small-pox in those who have not been previously protected, has been so frequently tested as to leave no doubt on the subject. The following case is particularly to the point. I was once called about ten o'clock in the morning to see a gentleman who had, about daylight, returned from Cincinnati. I found him in bed with his three small children. He was then approaching the stage of vesication of small-pox; in fact many of the poeks on his face were well filled. He was not aware, nor were his family suspicious, of the true disease, and he had frequently kissed his children, so that they were

all as perfectly exposed as they well could be. I vaccinated them all during the day, and repeated it the next day, for the purpose of securing success if possible. The vaccination took in all, and proved a complete protection against the small-pox to which they had previously been exposed. But there is a question connected with the prophylactic influence of vaccination to small-pox that has not been fully settled. It is, how long after exposure to small-pox will vaccination prove successful in preventing the occurrence of variola? Apart from any observations on the subject, we might suppose that vaccination performed at a period, after exposure to small-pox, but soon enough to allow the vaccine virus to produce its specific impression before the development of the variolous poison, would be likely to prevent the latter from producing any further effect, and I believe experience, so far as it bears on the question, sustains this view of the case.

In regard to the *time most appropriate for vaccination*, and the age at which it is most successful, I will remark, first, that it matters but little at what time of the year it is performed. But it will be found least annoying in moderately cold weather, though it should not be neglected on account of the season of the year, when it is otherwise best that it should be done, and especially if there is any probability of an exposure. But it has been said that vaccination is not as likely to be successful during either very cold, or extremely warm weather. The highly injected condition of the capillary vessels of the skin, and its imperfect development in very young children, render them less susceptible to its influence; or at least render the operation more difficult to perform, and consequently more frequently unsuccessful. It is therefore better to defer it until they are two or three months old, when there is no reason to apprehend an exposure, especially as exposures at that age are very likely to be known, and they can then be vaccinated and any serious consequences therefrom prevented.

I have already said all that may be necessary in regard to the kind of matter to be used for vaccination. I need scarcely say that great care should be taken to select only from such children as present the most unmistakable evidence of *good health* and *freedom* from any *scrofulous contamination*, and especially from any *eruptive disease*. We can scarcely doubt that the vaccine virus may partake in some respects of the character of the system from which it is taken. The health of the child and the condition of the skin are about all that is necessary to observe in this respect, except

the perfection of the vaccination. If the virus used is not taken from an unmistakably perfect vaccination, an unsuccessful effect may be produced, and an imperfect protection afforded. The age of the person from whom matter is obtained is of but little moment, though a child pretty well developed most generally affords the most perfect vesicle. I have, therefore, preserved scales and matter from children from one to four years old more frequently than from others further advanced, or much younger. Beside, children of these ages have not usually as frequent opportunities of exposure to other skin affections as those that are older, and are therefore to be preferred.

It matters but little whether the dried scab of the vaccine vesicle be taken off on the fourteenth or fifteenth day, and afterward dissolved as it is needed for use, or whether a slight puncture is made in the vesicle at about the tenth day, and the matter preserved by charging a number of points made from quills, or by saturating a small thread with the fluid as it gradually exudes. In whichever way it is taken, it should in either case be protected from the air by keeping it in a closed phial, or by being placed between two pieces of ground glass with a small hollow ground into one of the pieces. It may also be preserved in white wax.

The *directions* I have heretofore given for the *mode* of performing the operation are, it is presumed, sufficient. I will only add that the left arm is usually preferred, probably, and only, so far as I am able to perceive, because the left hand is less used than the right; and the point preferred is about the insertion of the deltoid muscle, or midway between the elbow and the shoulder, on the anterior side. If the saturated thread is used, a small section of it should be gently pressed under the skin, into the puncture, made as before directed, and allowed to remain there. In any case, when the first operation is not successful it should be repeated from time to time, until the insusceptibility of the system is fully ascertained; and even then, when it has never taken, it should occasionally be tried to ascertain whether the system has not undergone some change. As the only known method of testing the genuineness of the first vaccination is either a second insertion or exposure to the small-pox, the former is of course to be preferred, and should always be repeated shortly after the first has got well.

The *treatment* of vaccination requires no direction, since no remedial appliances are generally required. But if the condition

of the system, at the time the action of the vaccine influence is most sensibly felt, should be such as to perpetuate, or considerably increase, the febrile excitement usually attendant upon the case, a little mild physic, and special attention to diet, will be all that is necessary. It is important to preserve the vesicle from molestation, and therefore, when the child is inclined to scratch or rub it, it should be watched, and the arm kept sound. This is more especially necessary in the early stage, before the general system has experienced the influence of the disease.

A few words more on the subject of *revaccination*. A measure so simple in its application, so harmless in its immediate effects, and yet of such infinite importance as a prophylactic, should require but little persuasion for its trial when there is the most remote probability that it may be necessary. Although I should consider it a work of supererogation where it is perfectly certain that it has been once entirely successful, yet there are so many circumstances influencing its action, and interfering with its complete operation on the system, and also so much of doubt as to the quality of matter that may have been used, and the system occasionally shows so singular an insusceptibility to the influences of morbid impressions, that where there was the least probability of an exposure to variola, I would always advise revaccination, and more especially if an epidemic was known to be prevailing at the time. Nor should it be confined to those who had been previously vaccinated; but those who relied upon inoculation for their protection should be tried with vaccination, as I have in one or two instances, known lamentable consequences to follow neglect of this kind; and in a large number of cases have witnessed very satisfactory vaccine vesicles in persons who had considered themselves safe, from previous inoculation. Indeed so perfect were the vesicles as to leave no doubt that the subjects would have contracted small-pox in a serious form, if they had been exposed. Still further, I do not hesitate to recommend a trial of vaccination where a person has had small-pox without inoculation, if the attack was light and uninfluenced by epidemic qualifications, as second attacks of small-pox do frequently occur under the circumstances I have supposed. When therefore I urge upon every one, not even excepting those who have had the small-pox in a moderate way, to be occasionally revaccinated, I would not be understood as expressing any doubt of the efficacy of vaccination when fully successful, or as implying any suspicion that its influence

will wear out when the virus has been once completely infused through the system. If it has been previously successful no effect will be produced; but if it has not been fully protective in its influence, the effect of revaccination will indicate the degree of susceptibility that still exists in the system.

The extent of the inflammation in these cases is not a true test of the quality of the vaccination, or the susceptibility of the system to the variolous influence. But the nearer the local character of the vaccine vesicle approaches an original and perfect one, and the more the general symptoms resemble those attendant upon the genuine cow-pox, the greater the necessity for revaccination. In some cases a very considerable amount of inflammation will result from the insertion of the matter, and frequently great constitutional disturbances will be attendant, when the appearance of the vaccination will indicate a very imperfect pock. I have witnessed this in a number of instances, both in those who had been previously vaccinated and in those who had been inoculated.

The spurious cases will be known, also, by the more rapid development of the sore after the insertion of the matter; in these cases, the first slight impression that the puncture usually produces, does not subside as in the genuine form of the disease, but gradually increases, so that by the fifth day, when a genuine vaccination would present a very small umbilicated vesicle, the spurious pock would show a large, diffused, inflamed swelling, with, perhaps, a purple center at the point of the insertion of the matter, and would be accompanied by feelings of general illness. Or for two or three days following the insertion of the matter, the irritation may increase with considerable itching, and then subside.

[It is said that the virus is much more promptly and certainly absorbed when the point of the lancet or needle with which it is introduced is magnetized. I am inclined to believe there is truth in the statement, though my experiments have not yet been sufficiently numerous to justify a positive opinion. S.]

LECTURE LXXVIII.

CONTAGIOUS DISEASES.—CONTINUED.

Scarlatina, or Scarlet Fever: Various Grades; Three Varieties; Symptoms; Scarlatina Simplex; S. Anginosa; S. Maligna; Sequelæ; Morbid Anatomy; Cause; Second Attacks; Diagnosis; Prognosis; Treatment.

SCARLATINA, OR SCARLET FEVER.

Although legitimately classed among the contagious affections, no one of that group presents as many exceptions to the general laws of contagion as scarlet-fever, nor do any of them exhibit greater extremes in their course and symptoms. The disease is characterized by inflammation of the fauces, a scarlet rash usually extending over the entire surface, and frequently appearing soon after the first manifestation of active disease, but generally on the first or second day, and terminating in desquamation by the sixth or seventh day.

The wide range in the *grades* of scarlet-fever has induced the authorities to make distinctions, the description of which almost implies that they are separate affections. But, aside from the convenience that sometimes attaches to a distinction, of more justly appreciating the true character of a disease, and more clearly defining such modifications of treatment as may be required for different grades of severe affections, there is no ground for the distinction which we find in the books. The various grades of the disease are admitted to be produced by the same cause, and occur simultaneously in the same family. It is rare, however, to meet with any other disease presenting such extremes of mildness and severity in different cases, and it is still more rare to find one presenting the two extremes in the progress of the same case. Yet, notwithstanding these extremes, it can not be doubted that the different grades are essentially the same disease. The distinctions referred to are expressed in the books by the terms, *scarlatina simplex*, *anginosa*, and *maligna*.

Scarlatina Simplex.—*Symptoms*.—Frequently the first manifestation of disease in attacks of scarlet-fever is severe vomiting and

purging, associated with extreme paleness and prostration. This generally continues but a short time, when the quiet state of the system for an hour or two will develop a reaction with appearances of the characteristic eruption. But in other cases the ordinary feelings of languor and debility, with a loss of appetite, precede for a day or two the actual invasion, and are followed in time by pain in the head, back and limbs, and by slight rigors, alternating with flashes of heat, until at length the accession of fever is complete, with a sore throat, and the commencement of the characteristic rash, associated with all the general symptoms of severe febrile disease — heat of skin, frequent pulse, and perhaps nausea and vomiting. There is also great restlessness, tossing from side to side and throwing about of the limbs; and slight delirium and other nervous symptoms occur. In nervous children a severe convulsion often occurs in the commencement of an attack, followed by the nervous symptoms just mentioned; or perhaps stupor, almost amounting to coma, may supervene. Whether the difficulty of swallowing and soreness of throat precede the fever, or come on with it, enlargement and soreness of the tonsil glands are universal accompaniments of scarlet-fever. The extent of this local difficulty varies in different cases; in some it constitutes the main complaint throughout the course of the disease, presenting, from the earliest stage, a highly inflamed, or congested and swollen state. I have seen it, upon the first examination, presenting a slough of the size of a quarter of a dollar. The swelling of the glands frequently increases until the decline of the fever, and gradually subsides with the fever at the usual stage for its decline. Often, however, the inflammation excited by the specific disease transcends its proper bounds, and develops a sympathetic fever, which continues until suppuration takes place, or is relieved by appropriate treatment, or at last nearly fills the laryngeal passage, and the patient sinks from exhaustion and the want of the proper change in the condition of the blood. In light cases the soreness of the throat is not much complained of, and the patient goes through with little obstruction or difficulty of swallowing. But in all cases, so far as I have observed, the throat and fauces present the characteristic purple redness, with more or less swelling of the tonsil glands. The mouth, too, presents a similar though not so dark a red appearance, while the enlarged papillæ of the tongue project through the fur, and its tip and edges are fiery red.

The rash first appears upon the face, neck and breast, and very

soon over the entire surface, but does not often pursue the successive stages that characterize the development of the eruption in other eruptive contagious affections. In some instances it appears simultaneously over the whole surface, and at other times is fully developed on the body and lower extremities, while it is not to be seen on the face. It presents, at first, a fine-spotted or sprinkled appearance, but soon assumes more of a general flush of a pale-red color. In some cases there will be a distinctly spotted appearance, with more dark patches of considerable size, while the rest of the surface will be of the usual color of the eruption. It is sometimes so slight as to be recognized with difficulty, while in other cases the rash is so thick as to present almost an unbroken erythema over the whole surface, which is so complete as to have been compared to the appearance of a boiled lobster. In most cases a distinct morning remission in the febrile symptoms will be observed, followed by the usual evening exacerbation, and a corresponding change in the appearance of the eruption, presenting in the morning a paler color, but in the afternoon and evening a more complete and brighter scarlet shade. The change in the skin is not such as to be recognized by feeling, beyond a slight stiffness and want of pliability, but it is often slightly swollen, especially upon the extremities and face, and no doubt over the rest of the surface, though not so manifest. In some instances the eruption causes such intense action in the capillary vessels as to produce slight vesication in some of the angles of the limbs, which, upon the decline of the disease, may leave a crusted matter presenting the appearance of sores, sometimes degenerating into actual ulcers. In the early stage of the eruption, a burning or tingling sensation will frequently be felt over the body, which, as the disease declines, results in troublesome itching.

Whether the fever is developed a day or two before the characteristic eruption shows itself, or whether they appear simultaneously, they seem to progress and continue very much together, without any abatement, until about the fifth or sixth day, and sometimes a little longer, when they gradually decline, usually with distinct paroxysms of morning remissions and evening exacerbations, until they finally disappear, followed by a gradual return of all the healthy manifestations of the system. The pulse becomes slower, the thirst abates, the urine becomes more free and sedimentous, the appetite gradually returns, and finally the patient may be said to be in a convalescent condition. The tongue, which

has been fiery red during the whole course of the disease, sometimes becoming dry and parched, now exhibits a red and glossy, but moist, appearance. The bowels are frequently loose during the whole progress of the case, often commencing, as the attacks do, with vomiting and purging. The irritation, thus begun, frequently keeps up until the disease subsides, and sometimes after the active symptoms have all disappeared, and the patient has become convalescent. Sometimes, however, the first onslaught of the disease develops inflammation in the peritoneal covering of the bowels, that not only arrests the diarrhea, but produces an obstinate state of constipation which may require active physic for its relief. The intensity of action in the capillary vessels destroys the vitality of the cuticle, and after the subsidence of the disease desquamation of the cuticle takes place over the entire body, generally in small scaly particles, though in parts of the system, especially in the palms of the hands and on the feet, it comes off in large pieces. This process is generally troublesome in nervous children, the itching being so severe as often to prevent necessary sleep, and sometimes considerable sores are produced by the scratching, especially about the face and lips.

The course of scarlet-fever is exceedingly variable; in some instances presenting few symptoms of any gravity, a slight scarlet rash and a very moderate febrile excitement lasting for a few days, and then passing off without any complaint of soreness of the throat; though in these cases an examination of the throat never fails to discover the characteristic redness and slight swelling of the tonsil glands. In some cases the local and constitutional symptoms are so light as to be scarcely noticed, and the child, being barely unwell, with a slight rash, will be playing about the house almost as usual. These symptoms would constitute the simple variety of scarlet-fever, or *scarlatina simplex*.

Scarlatina Anginosa.—Then again the symptoms present a more severe aspect, generally and locally. The soreness of the throat is a prominent symptom, producing both an external swelling in the glands of the throat, and internal obstruction and difficulty of swallowing. The eruption appears later, is generally less copious and diffused, occurs in patches or is confined to certain parts, is often irregular in its appearance, now coming out, then receding—and the accompanying fever is more intense and severe. The pulse becomes frequent, in some cases exceedingly rapid but small, though more commonly hard and full. Respiration is irregular, and some-

times sighing, but generally hurried. The skin presents a most pungent and burning heat, and is extremely dry. The thirst is urgent, the mouth parched and red, with the papillæ of the tongue prominent. The tonsils are frequently covered in patches with a yellowish, deadened epithelium, giving the appearance of canker, and often resulting in ulceration. The mouth, too, presents a similar appearance, with here and there a deep ulcer with prominent edges, both on the tongue and the sides of the lips and cheeks. The lips are covered with dry, cracked scales, often extending through to the true skin and bleeding. The teeth are covered with dark sordes. The nasal passage seems dry and obstructed, and the patient, finding it impossible to breathe through the nose, lies with the mouth open. In this condition, the tonsils and throat being stiff and swollen deglutition becomes difficult, and in the effort to swallow a fluid it is violently regurgitated, and runs out of the mouth and nostrils. The voice is thick and muffled, and the articulation is often difficult and indistinct. The breath in these cases becomes exceedingly offensive, and, frequently, in the advanced stage, an offensive, acrid discharge issues from the nose, which scalds and irritates it, and extending to the lips and cheek, as the patient lies on the side, produces a similar effect. In this condition, too, a thick, tenacious mucus is often secreted in the throat in large quantities, exciting a constant effort to clear the throat, and in some cases the irritation extends to the larynx, producing an irritating cough, which becomes a troublesome symptom, from the frequent and distressing efforts required to discharge the mucus thus formed. Diarrhea is a very common symptom in these more severe cases, and constitutes a grave feature of the disease. The embarrassment of the system from the oppressive influences just enumerated, renders this far more frequently fatal than the simple grade.

Scarlatina Maligna.—Other cases, again, present a still more malignant aspect, with a low state of the vital forces, frequently beginning with vomiting and purging, and the simultaneous appearance of the eruption in irregular, dark, or purple patches. A state of extreme prostration shortly supervenes, the pulse becomes so rapid as to be counted with difficulty, and is small and easily compressed; there is great loss of action in the capillary circulation, and it is not uncommon for the patient to become stupid or comatose; the extremities being cold, and the skin upon the body sometimes being cooler than natural, and though more com-

monly above the natural temperature, and the head exceedingly hot. The eruption presents a purple appearance, and if the blood is pressed out of the capillary vessels it very slowly and imperfectly returns. These cases present more the character of extensive venous congestion of the whole system, with but little apparent obstruction in the throat, and the patient often sinks in a state of coma, or dies in a fit of convulsions.

Though these modifications of scarlet-fever may be frequently observed, and each variety may continue to mark a case throughout its whole course, yet we frequently find them imperceptibly passing into each other, or suddenly changing from one extreme to the other, and thus determining the identity of the different varieties. Nor can we determine from the first manifestations of the attack whether it is to be one or the other of the varieties named. Thus I have witnessed the most rapid and malignant attack, presenting the most prominent symptoms of a fatal case, arrested by prompt measures for equalizing the circulation, and arousing the embarrassed energies of the sinking system, and in the space of a few hours changing to symptoms of a light attack, which would be finally, and very soon entirely, relieved. Then again I have witnessed a patient, presenting the ordinary symptoms of the anginose form, and these progressing as favorably as could be expected, in the space of a few hours marked as the certain victim of a most malignant disease, and doomed to a short career.

[The quality of malignity may attach to cases that in other respects present the characteristic symptoms of either the simple or anginose form of the disease, and may exist in the beginning or appear during the progress of the case. S.]

Sequelæ.—The great severity and frequently fatal termination of scarlet-fever during its regular progress are not the only serious characteristics of this affection, that mark it as one to be feared and deplored. After the system has struggled through the several stages of a severe attack with the utmost difficulty, and at the hazard of life, not unfrequently—and, sometimes as if by way of diversion for the peculiar local disorder—a severe attack of inflammation of the eyes, involving the lids and ball, sets in, and in a short time serious organic lesion has taken place in one or both eyes, to an irreparable extent, the poor sufferer thus being made the blind, or partially blind, and comparatively helpless victim of this rapid disease. In other cases, among the *sequelæ* of scarlet-

fever, the inflammatory action in the throat is propagated to the internal ear, abscesses take place in one or both of those organs, and, if there is not a total loss of hearing, a chronic discharge is set up which frequently lingers for years, is always troublesome, and is very difficult to cure. Abscesses, also, in different parts of the body, but especially in the parotid and submaxillary, or in some of the lymphatic glands of the neck, often follow in the direct train of the affection. But after all danger from the reflected inflammation is passed, and the patient is in a fair way to recover, it is no uncommon occurrence for anasarca swellings, and dropsical effusions into the cavities, to follow that state of general irritation, accompanying the acute disorder. [In all the cases of scarlatina that I have examined there was more or less albumen in the urine during the later stages, and it is probable that considerable albumenuria exists in all cases of dropsy following this disease.--S.] The extensive irritation existing in the mucous membrane of the stomach and bowels, during the progress of scarlet-fever, is frequently followed by the same difficulty in a chronic form, producing a troublesome diarrhea as one of the consequences of that disease.

Morbid Anatomy.—The anatomical relations of scarlet-fever present little of special interest. In fact the pathology of all the contagious affections has received but little aid from the morbid developments observed after death. The truth is, the philosophy of disease has to be sought through some other channels than the old paths of morbid anatomy, and other instruments than the scalpel and forceps must be used to develop the mysteries of diseased action, before we shall arrive at any thing like the certainty that constitutes the essence of true science. The profession are beginning to direct their attention in the proper course, and if no other good has thus far resulted, at least the errors of the old system are becoming apparent, and a gleam of light from what may be effected by the change begins to be seen. The importance of this course was seen and pointed out a number of years since by one of the most brilliant intellects that ever adorned the profession, and more important truths were taught by the same eminent professor (Magendie), than ever resulted from all the post-mortem investigations put together.

In relation to scarlet-fever I may say that the most rapid and fatal cases develop the least evidences of morbid action, thus showing that the lesion does not consist in organic disturbance, located

in the parenchymata of the solid tissues, but is to be sought in the condition of the fluids and the state of the nervous system. When, however, morbid action is exhibited, that condition of the organs exists which the symptoms during life would reasonably suggest. Traces of morbid action will more frequently be observed in the mucous membrane of the stomach and bowels, than in any other parts. The skin also frequently manifests a state of sanguineous determination, and the cuticle is often loosened from its attachment to the tissue beneath. The condition of the blood varies, though the examination of that fluid has not been sufficiently studied to elicit the important truths that will ultimately grow out of it. By this means much light will undoubtedly be hereafter thrown on the cause of the morbid actions connected with this affection.

Cause.—Scarlet-fever has been so often propagated by inoculation as to leave no further doubt of its contagious character. But it does very often vary from the common rules of other contagious affections, and its frequent failure to infect those who are exposed to the contagion often creates the impression that it is not a contagious disease. The occurrence of the disease, also, under circumstances which seem to preclude the possibility of direct exposure implies a spontaneous origin, and in that it is different from some, if not all, of the other contagious diseases. But so little is known of the primitive origin of this whole class of affections that we are not at present prepared to reason correctly on the subject. Certain it is that all these disorders must have had a primitive spontaneous origin, and must have started forth with an inherent capacity for a continuous perpetuity. But it does not follow that after being once started the combination of circumstances originally causing the disease should never again occur. In this respect the different contagions may vary, so that while in one the same circumstances might rarely if ever recur, in others they might frequently do so. It is not yet fully determined that we can account in this way for the frequent recurrence of any of those affections, because we are not yet in possession of all the facts relating to their propagation, and if we were, we are rarely if ever able to ascertain all the circumstances connected with the origin of those cases supposed to be spontaneous. We must, therefore, defer the determination of this question to future research and observation.

Whatever may be the direct origin of the disease, it will not be doubted that epidemic influences are more frequently operative in

the prevalence of scarlet-fever than in most other contagious affections, if not of any other disease whatever. It is rarely a widespread epidemic, like cholera or influenza, affecting whole countries, or the whole world, by successive movements, but is most generally limited to single districts or towns. We can not suppose that epidemic influence is sufficient to produce the disease without the specific cause to develop it, but we frequently find the epidemic character of the prevailing disease to be greatly in consonance with the specific one. Thus, in epidemic scarlet-fevers, most of the community suffer more or less with sore throats, not having, however, the character of the contagion of scarlet-fever. So of measles. An epidemic influenza, simulating the disease in every thing but the characteristic symptoms of measles frequently occurs in connection with that contagious disease, affecting more or less those that are protected, as well as those who are not. We must not, therefore, confound the epidemic attachment of any contagious affection with the contagious disease itself.

Scarlet-fever attacks indiscriminately all ages and both sexes, though it is more commonly met with in children—adults being generally protected by previous attacks. But it appears to be less general in its attacks than most other contagious diseases, as a large portion of the community never have the disease. In this it often presents a most singular character, frequently affecting a single member of a large family, while all the rest escape, though, generally most of the other members feel the influence of the poison to some extent. It may occur at any season of the year, but most frequently prevails during the cold and variable seasons of winter and spring: this is more especially the case with an epidemic attachment.

We know but little of the laws that govern the propagation of any contagious diseases, and especially of that property which they seem to possess, in a greater or less degree, of attaching to fomites, and being thus conveyed remotely from their origin; nor do we know the period that may elapse before the poison loses its infectious properties. There can be no doubt, however, that the poison of scarlet-fever possesses this peculiar property, and that it is capable of retaining its contagious influence for some months. The period intervening between the exposure to the cause of the disease, and its first manifestations, varies slightly in different cases, though not sufficient to constitute an exception in this regard to the class of contagious diseases. It is generally about three or four

days, varying perhaps a day or two, and sometimes, it is thought, much longer from that time.

Second attacks of scarlet-fever are more common than of other contagious affections, and are more liable to occur when the disease is prevailing as an epidemic than under other circumstances. Thus, when it was prevailing here and there in the month of March, two children of a family among my patrons were attacked with it, one in the mild and the other in the malignant form, but both recovered. In the following November the disease was prevailing in the same neighborhood as an epidemic, when it showed itself again in the same family, first in some other members, and at length in the two children who had had the disease the previous spring, but in inverse degrees from the former attacks. The one that had it lightly before, barely escaped with his life now, while the one whose case was malignant before, had a mild attack this time. In both of these patients, and on both occasions, the most unequivocal symptoms of the disease existed.

Diagnosis.—In its fully developed eruptive stage, there is no disease that ought to be mistaken for scarlet-fever, and even in its earlier stage there is no distinct affection that closely simulates it. But before the disease is fully developed we may feel some doubt as to the character of the affection, though with any discrimination we would be more inclined to pronounce it scarlet-fever than any other disease. A severe erythema affecting the whole surface would be more likely to be called scarlet-fever than any other disease I have ever seen. But the complete and diffuse redness of the surface instead of that finely-dotted appearance in scarlet-fever, will enable you to make the distinction. Besides, in erythema, the anginose symptoms are wanting that are always present in some degree in scarlatina. From measles it will be distinguished by the irregular distinct eruption, generally of a higher color, and the more prominent catarrhal symptoms in measles than in scarlet-fever.

Prognosis.—With appropriate treatment scarlet-fever should in most cases terminate favorably; yet there are few diseases in which the careful physician will feel less certain of the result of every case, than this. The sudden and often unexpected changes from the mildest to the most malignant, and from the severest to very moderate symptoms, must necessarily produce a feeling of uncertainty that will not justify an unqualified prognostication in any case. But generally our prognosis may be predicated upon the

degree of violence presented by the attack; so that while scarcely one case in a thousand, in its mildest form, should prove fatal, a large proportion of the most malignant cases have thus terminated under any mode of treatment heretofore known. Most cases of the anginose form of the disease, if promptly and properly treated, will recover; but if allowed to progress till extensive congestion has taken place, and the vital forces have become greatly benumbed by the accumulated poison, this form of the disease will be likely to have an unfavorable result. The prognosis, then, in ordinary cases of scarlet-fever will depend upon the violence of the attack, the course of treatment that is pursued, and the stage of the disease when you are called. These qualifications apply equally to all complications, though the various conditions of the system, and the connection with other morbid processes, will greatly influence the result of scarlet-fever. Thus, during pregnancy, a severe attack would be more likely to prove fatal than under other circumstances. Some females seem to possess a singular aptitude to the affection, while others again are never affected. So in regard to the violence of the disease in different families; in some, all who have it present the severest symptoms, while in other cases, it may go through the whole family with great mildness, and both instances may occur during the prevalence of the same epidemic.

Treatment.—Mild attacks of scarlet-fever, in almost every instance, will have a speedy and favorable termination without any medical treatment whatever; and the great danger in such cases results from improper interference by the administration of medicine, and from neglect of the hygienic measures always important in the management of disease, but indispensably necessary in scarlet-fever. In these cases the patient should be kept quiet, and, if not so sick as to be confined to bed, should at least be confined to a room of a uniform temperature, while entire abstinence from food, except a very small amount of some fluid farinaceous kinds, such as rice-water, farina-gruel, or barley-water, should be directed, and a flannel should be worn around the neck, and the throat occasionally bathed with camphor or some simple liniment. After two or three days, if the bowels do not appear sufficiently free, a Seidlitz powder or a bottle of congress-water may be ordered; or earlier, if the bowels are costive, they may be moved by the aid of an injection of castor-oil, molasses and water. But unless there is some complication, or some unexpected and untoward tendency manifest in the case, you will most assuredly be traveling out of

the record, and liable to do violence to the system, if you do more than I have intimated.

In the treatment of scarlet-fever, we must constantly bear in mind that the cause of the disease is an unrevealed mystery, — a specific poison, of the nature of which we know nothing, and whose influence upon the system is but imperfectly understood. We can not, therefore, attack the disease as we can other affections, the causes of which we can comprehend, and the effects of which causes are intelligibly manifested in the symptoms they develop. We may with great propriety watch the changes that occur, and endeavor to hold in abeyance any tendency to local determination, that is not a necessary result of the specific poison, by the timely administration of the remedies and the use of the means which experience has taught us tend to relieve these conditions in the different organs and parts referred to. We may in this way prevent serious local complications, or remove them when they occur.

But do we possess any remedy which experience has taught us has a counteracting or neutralizing influence upon the specific poison in its action upon the system? I am honestly inclined to answer this interrogatory in the affirmative. If severe attacks of the disease are seen, time after time, gradually to yield in the violence of their symptoms, and in a much shorter space of time than all experience has shown is the natural tendency of the disease, where it has no untoward complications, and if patients recover without any other treatment that could account for the result, we must yield it our confidence until further experience shall explain the facts, and show the fallacy of the conclusion. Some ten years ago I learned, from some authority which I thought entitled to high consideration, that belladonna when administered in appropriate doses did with great uniformity exercise control over scarlet-fever. I accordingly determined to try it upon the first opportunity that offered; and I did so in all the cases, amounting to a hundred or more, that came within the range of my experience for the next four or five years, and among which a number occurred of a very severe and unpromising character. Attacks, commencing with vomiting, and accompanied or soon followed by the eruption, a rapid swelling of the tonsil glands, hard and labored breathing, and with either extreme restlessness or great stupor, were so far relieved in twenty-four hours as to present the mildest symptoms of the most simple variety, and in the next twenty-four

hours the eruption faded away, the disease of the throat subsided, and every symptom of the disease disappeared. Among the cases treated were quite a number of this kind, while the less severe went through in about the same period without any complications or local disease following.

But I must not mislead you. You must have my whole experience, and thus be able to form, in some measure, a conclusion for your future guidance in such cases. After treating, as I have stated, every case that came within the range of my practice during the period mentioned, two or three cases occurred presenting a most striking imbecility of character, upon which the belladonna failed to make any favorable impression, and I was finally induced to resort to the old measures which had proved generally successful in the disease. The old remedies also failed, and the disease went onward until the patient sank and died. But the cases were characterized by a severe epidemic accompaniment of a strong congestive tendency, which in the main governed the case, and could not be controlled by the specific counteracting influence. This result, for a time, weakened my confidence in the remedy, and started the question, whether the apparent effects before observed had not been mere accidental concomitants, while the cure had been effected, in fact, not by the medicine, but by nature unembarrassed by interference, and consequently whether, in the unsuccessful cases, the system had not been overpowered and prostrated by the disease? But subsequent experience has strengthened the first conclusion, and renewed my confidence in the medicine, provided it is of good quality and properly used. The reason why the medicine failed was from the complications produced by the epidemic influence, over which the remedy does not claim to exercise control.

The course pursued is to administer the extract of belladonna every two hours, to a child eighteen months old, in ten-drop doses of a solution of two grains to the ounce of water, of a good and tested article. If accumulations in the stomach were indicated either by a thickly coated tongue, or by vomiting of vitiated secretions, I premised with an emetic of lobelia and boneset in decoction, given in appropriate doses. If the bowels are loaded a cathartic injection, or, if that is not thought sufficient to remove accumulations, a small dose of castor-oil should be given, after the irritability of the stomach has been relieved. If this course should not hereafter prove as successful as it has heretofore proved, then

I would earnestly recommend other measures which formerly, for a series of years and in the treatment of hundreds of cases, did prove generally successful. But if the belladonna should be found, as I can not but think it will be, a valuable article in the treatment of this affection, to the extent, at least, of counteracting the specific poison wholly or in part, then it may be used while the other measures, which I am about to describe, are being administered for the purpose of fulfilling other indications in the case.

I have already given sufficiently full directions in regard to the treatment of the mild and uncomplicated modifications of scarlet-fever. In the anginose form, if there are no complications that require corresponding remedies, and the stomach does not show particular evidences of accumulations, the bowels should be gently evacuated by an injection; or if accumulations are discovered in them, a small dose of pure salad oil, or, if you can procure it, East India castor-oil, may be given. If neither the stomach nor bowels require to be evacuated, as in many cases they will not, and if the disease is progressing without any untoward symptoms, it should be allowed to do so without the interference of medicine; though a towel, wrung out of cold water, may be applied to the throat and changed once in three or four hours, or so as to keep it moist and cool. But in severe cases where the tonsil glands are greatly swollen, and the difficulty of swallowing is increasing, an infusion of our emetic powder should be given and repeated until free vomiting takes place.

R. Ipecacuanha, Lobelia, aa 3ss.

Capsicum an., gr. x. Mix.

Steep in half pint of hot water and strain.

To a child give a dessertspoonful every ten or fifteen minutes.

The emetic should be repeated whenever the existing symptoms indicate filling up of the throat. Meantime if the throat, upon examination, exhibits a dark or purple appearance, it should be gargled once in three or four hours, with a decoction of half a drachm of Cayenne pepper and a drachm of common salt in a tea-cupful each of vinegar and water, or if it can not be gargled a swab may be used. Between the times of using the gargle, a decoction of *hydrastis canadensis* may be given in a similar way, taking at the same time small portions into the stomach, and it should be substituted for the pepper and salt gargle when the throat does not present a dark or purple color. [Where there is much swelling of

the throat, a poultice of cranberries is said to be a valuable measure. The cranberries should be beaten into a pulp and applied cold around the neck and jaws. I have tried this in some cases with varying results, and am not prepared to speak confidently in regard to its usefulness. S.]

While these measures are being pursued, if the throat is much inflamed, I have witnessed good effects from cupping, and scarifying each side of the throat over the tonsil glands, and then applying the wet towel. At the same time the surface should be freely sponged with warm whisky and water every hour, or oftener, if the patient is very restless and the skin very hot. In some cases, when the skin presented a pungent heat and a florid color, I have witnessed most excellent effects from sponging the surface with cold water; at the same time the cold marsh-mallows mucilage may be freely taken as a drink, or the patient may take internally, after the emetic, small quantities of pulverized ice. The bowels in some cases should be moved with some mild physic. The salad or castor-oil, as before directed, will generally answer; but if they are costive and difficult to be operated on, a small dose of a decoction of the compound powder of senna and jalap may be given; being always careful not to produce irritation of the bowels with drastic or irritating cathartics.

In malignant attacks where the vital forces are at once prostrated, or are rapidly sinking under the accumulated weight of the original morbid influence and the resulting congested state of the circulating fluid, but little time should be lost either in administering expectant remedies, or from fear of local inflammatory symptoms. As a prompt means of temporarily rousing the nervous energies and equalizing the circulation, the emetic before directed may be premised. But when this is over, or if it is not thought best to administer an emetic, the salt and pepper decoction in one or two teaspoonful doses, according to the age of the patient, should be given once an hour or oftener, until the circulation is improved. Meantime the quinia and iron should be given every two hours in equally large doses as for bilious fever. In these violent and rapid cases the extremities will be cold, and the eruption will exhibit a dark and purple appearance, to relieve which you will find no means so prompt and reliable as rubbing them with dry mustard and wrapping them up in hot flannel. In fact I have witnessed the most beneficial effects from rubbing the whole surface freely with the dry mustard, and repeating it as often as

may be necessary to restore action to the lost capillary circulation, which will be indicated by the change in the color of the eruption from a dark purple to a bright florid, and by a more natural warmth in the extremities. After the symptoms of congestion are relieved, and the circulation has become more full and regular, the stimulant should be suspended, and the patient allowed to take the marsh mallows and ice as before directed; and if the skin should become hot and dry it may be freely sponged either with cold water, or warm whisky and water, as may seem most congenial to the patient, or beneficial to the case.

I have occasionally found scarlet-fever complicated with worms, which not only embarrassed the case, but prevented the operation of the emetic in a number of instances. These cases I have been accustomed to treat the same as for worms and always with good effect. (See Worms, Vol. I., page 788, et seq.) But there is another complication that I have so often met with in this Western country, that I should be doing both you and the subject great injustice if I failed to mention it. I refer to the periodical complication, and I can not perhaps more clearly present the views I desire to inculcate than by relating the case of a patient I was once called to see, and for whom I prescribed. The patient was a girl some six years old, and had been sick eight days when I was called to see her. I found both ears discharging, and her hearing so completely impaired that she could not be made to hear the loudest conversation; in fact she was perfectly deaf so far as I was able to determine. One of her eyes had an ulcer involving the whole cornea, and its vision was irretrievably gone, while the other eye was so much inflamed as to involve not only the eye and lids, but the whole cheek. And thus with the most certain prospect, as I then thought, of being entirely deaf, with an equal chance of losing the remaining eye, and thus of being made both blind and deaf; with great swelling of the tonsil glands, and a distinct morning remission and evening exacerbation, I found the parents still anxious to have her saved. The child's mother was her own family physician in most cases, and had treated this case up to the time I saw her. I pursued the course of wrapping around the child's neck a folded towel wrung out of cold water, and changed once in three hours, and directed linen rags, dipped in warm mucilage of slippery-elm, to be applied to the eyes, with instructions to change them as often as they lost the slippery mucilaginous feel, and not allow them to get dry; also to have the ears

carefully cleansed with a decoction of hydrastis, three times a day, by syringing; and I left eight powders of two grains each of quinia and prussiate of iron, four to be taken the next forenoon, and the other four on the following day. For her diet she was allowed squirrel broth, at first in very small quantities, and buttermilk for drink, or mucilage, as she might prefer. The course was to be pursued until I should see her again on the second day, their residence being some nine miles in the country. The fever was arrested the second day after administering the powders, the inflammation of the eyes gradually declined under the cooling and soothing treatment they received, the swelling of the throat became less and finally disappeared under the application of the wet towel, and in about two weeks the patient's hearing began to return, and was ultimately entirely restored.

This periodical remission and exacerbation is not always confined to the last stage of scarlet-fever as in the case just cited, but I have frequently observed it in the early stage, so well defined as fully to justify the administration of the antiperiodic remedies as freely, and with as little fear of aggravating any symptoms in the case, as in an uncomplicated attack of remittent fever; and though the specific affection may not be directly benefited by this course, yet an important embarrassment of the system will be removed, and additional chances thereby given for ultimate recovery.

The great susceptibility of the system in every respect, and the general tendency to local irritation in most of the mucous membranes, produced by scarlet-fever, render convalescence from an attack of that disease always fraught with great risks of serious difficulty. Hence not only exposure to cold or to sudden changes of temperature, but also indiscretion in eating, often produce disorders little less dangerous than the original affection. In fact the *sequelæ* of scarlet-fever often prove fatal. The system may be so much reduced as to require mild tonics, though the existing irritation in the mucous membrane of the stomach and bowels generally precludes the use of direct stimulants. Mild, unirritating tonics can, however, usually be borne. The infusion of *ptelea*, or wild-cherry bark, will be found among the most valuable for such cases, and may be taken in wineglassful doses three times a day. The diet in all these cases must be, for some time, very light and easily digestible. Very little if any meat, but rice, farina, stale bread, and other articles of a similar kind, should be prescribed.

Various difficulties may follow from scarlet-fever, either as direct

consequences of the disease, or as indirectly resulting from the condition in which the organs are left by the disease, and subsequently acted on by other exciting causes; each of which will require to be appropriately treated.

Much has been said at different times of the *prophylactic* influence of different measures for the prevention of scarlet-fever when it is prevailing. Among the remedies which have been specially recommended, none have been more confidently urged upon the profession, by some who claim to have used it, than belladonna. Its value in this respect is variously estimated, though, whatever may have been the experience of individual practitioners, it has not received the sanction of authors generally. It is however one of those questions that are difficult to determine. I have myself frequently prescribed it, and though general exemption from attacks of the disease has been the result, yet single attacks of scarlet-fever are so common in large families, where all are exposed without the use of any means particularly intended to prevent its occurrence, as to render such experiments not very satisfactory. Other measures have been tried, but I have had no personal experience with them.

[I have uniformly prescribed small doses of belladonna to all the children of families where I was treating a case of scarlatina, and have never had a case to occur while the medicine was being taken regularly every day. It should however be continued sometime after the disease has disappeared from the family, and indeed until the epidemic has evidently ceased to prevail, for the medicine certainly does not leave the system protected in the least after its immediate influence has passed off. I do not deem it necessary to give belladonna in sufficient doses to produce any visible therapeutic effects. I usually order ten drops to be taken three times a day, of a solution of two grains of the alcoholic extract in an ounce of water.

S.]

LECTURE LXXIX.

CONTAGIOUS DISEASES—CONTINUED.

Rubeola or Measles: Premonitory Symptoms; General Symptoms; Eruption; Diversities; Anatomical Relations; Cause; Diagnosis; Prognosis; Treatment. Varicella or Chicken-pox: Symptoms; Cause; Diagnosis; Treatment. Parotitis or Mumps: Symptoms; Metastasis; Treatment.

RUBEOLA, OR MEASLES.

Measles has been long known, indeed has been correctly described by writers upon medicine for the last thousand years. It is one of the eruptive contagious affections, characterized by prominent catarrhal symptoms, accompanied by fever, and about the fourth day of the attack the peculiar eruption upon the skin appears, but without much abatement of the fever or other symptoms.

The *early or premonitory symptoms* do not differ from those of many other acute diseases, and we therefore can not foretell the character of the impending disease until its more characteristic manifestations are developed. A sense of weakness or lassitude, with alternating chills and flashes of heat, aching in the limbs, headache, etc., which are soon followed by an excited pulse, and more permanent accession of febrile symptoms, such as heat and dry skin, loss of appetite and furred tongue, are essentially the ordinary symptoms of common febrile affections. But when to these are shortly superadded, suffused eyes, occasional sneezing, discharges from the nose, with hoarseness, sore throat, inflamed fauces, and presently a harsh tearing cough; we may then begin to suspect an attack of measles. In some instances when there is great fullness in the head and nose, hemorrhage from the nose takes place. Respiration is hurried, and in some cases a slight dyspnoea is complained of. The bowels in the early stage are generally costive, but in the progress of the disease frequently become irritated and loose. In children of nervous constitutions severe convulsions sometimes occur at about the period for the appearance of the eruption. The fever continues, often appearing slightly

to remit in the morning, and the catarrhal symptoms increase with a troublesome, hoarse, rough and tearing cough, until the eruption comes out about the fourth day.

The *general symptoms* that occur previous to the eruption vary greatly in severity; in some cases the child will seem barely to have a bad cold and slight fever, will be stirring moderately about the room or quietly sitting down, slightly dull and sleepy by turns, but generally quite sprightly and often playful in the morning, but more dull in the afternoon, until the appearance of the eruption. In other instances there are severe fever and some flightiness from the beginning. Thus, as in other diseases, will a sensible difference in the symptoms be observed in different individuals. The progress of the cases, however, will not differ thus far, without some singular complication, or an unusual variation from the ordinary course. Thus after the symptoms just enumerated have continued with various degrees of violence for about four or five days, sometimes on the third, but generally on the fourth, the eruption begins to appear. In severe cases it will seem to show itself slightly for a few minutes and then disappear, and will continue thus for a day or two until some measures are taken to determine it more fully and permanently to the skin. I have seen one or two instances where the attendant and subsequent circumstances clearly showed the disease to be measles, the eruption never appeared, but seemed to be diverted by local determination to the formation of an abscess. The eruption first appears about the angles of the face, or on the temples and neck, then upon the trunk and lastly on the limbs. Its development is very gradual, requiring about three days from its first appearance before it has fully extended over the body and extremities. About the fourth day of the eruption the general symptoms begin slightly to abate; the eruption that was first shown upon the face begins to fade, and thus it goes on gradually declining in the parts on which it was first manifest, thickening on the last points where it was seen, and still extending further, until, on about the tenth day of the disease, or the sixth of the eruption, it has greatly faded, and the general symptoms have mainly disappeared.

The *character of the eruption* is peculiar and requires to be seen to be correctly appreciated. At first it presents mere points of red without any prominence, which very shortly appear to coalesce, and change from mere points to an irregular and diffuse redness in sprays, of the size of a half a dime, sometimes less or larger, with

intervening spots of a nearly healthy or natural appearance. The eruptions will disappear under pressure and feel slightly raised or rough. [The careful observer can generally recognize a slight approximation to the "crescentic," or rather reniform shape of the red spots.—S.] These are the general appearances, as well as I can describe them, but varying in different cases. In some the eruption is of a brighter red, while in others it presents a more purple hue; in some, very small spaces only of unoccupied skin will be found between the eruptions, presenting the appearance of nearly one continuous erythema, while in others the irregular flat eruption will be in more distinct patches; the prominence of the eruption also varies in different cases. The fauces, if examined, will present the same irregular patches of redness that are shown on the skin, and the tongue, which was thickly coated, begins to exhibit the projecting papillæ, especially on the back part, which gradually increase till the whole tongue seems occupied by one continuous redness. The fever begins to decline on the third or fourth day, as the eruption on the face begins to fade, and thus they gradually and simultaneously disappear. The cough, too, that had become more severe and troublesome as the eruption increased, begins to be more moist, and a more free and a thicker expectoration is observed as the fever and eruption subside. But in some cases, as the eruption disappears, the cough becomes tighter, the respiration more oppressed, and there is every symptom that an attack of inflammation of the mucous membrane of the bronchial tubes, or air-cells of the lungs, is supervening. Instead of this, however, a severe and often prostrating diarrhea may occur, accompanied by great tenderness of the abdomen upon pressure, and frequent griping pains in the bowels.

Few diseases present greater *diversities* in the character of their symptoms than does measles in all its different stages. But however the various stages of measles may differ, you will generally find it pursuing the regular periods characteristic of contagious diseases. Thus, whether the initial fever be slight, or severe and violent, the usual period will elapse before the appearance of the eruption. So also, whether the eruptive stage be marked by the mildest form of the disease, or present the severest manifestations, the regular period for a decline brings with it an amelioration of their severity, and the decline goes on. Severe complications, however, change the character of the affection, and necessarily remove it from its relation to the laws by which the specific disease is governed.

Thus an attack of inflammation of the lungs may take place during the progress of measles, and thereby interrupt the decline of the disease; though no doubt can be entertained that the specific disease has spent its force, and that the new developments are dependent upon other influences. So it is with other complications. Another influence may disturb the operation of the ordinary laws of this affection, and tend in some measure to obscure its regularity, though even then the force of the principle of contagion will be more or less manifest at every stage of the disease, till it is entirely obscured by the overpowering action of the complicated affection. Thus, during the prevalence of epidemic rubeola, most cases, though presenting unusual severity, will pass through the several stages with the accustomed regularity, and finally recover; but here and there a case will be met with manifesting from the beginning malignant symptoms, and as the disease progresses, the character of the original affection becomes obscured by the overpowering influence of the congestive symptoms produced by the enervating influence of the epidemic. The same influence may retard the appearance of the eruption, and thereby interfere with the natural progress of the case; and in the same way one or more of the several stages may be disturbed, though the case may ultimately recover; or it may so far interrupt the natural course of the disease as to convert it during its progress, or after the period for its decline has expired, into another and different disorder.

These modified influences that so change its natural features, have suggested the doctrine of varieties of the disease, though I believe few if any respectable authors recognize the distinction beyond what is produced by the causes referred to. The terms *black* measles, and in some places *French* measles, have originated in this way. There is no doubt that the conditions of the system have similar modifying influences that may tend to produce somewhat similar complications, and thereby change in a considerable degree the natural course of the disease. The most common complication of measles is inflammation of the lungs and bronchial tubes, often terminating in consumption, especially in grown persons. Chronic ophthalmia often results from the inflammation of the eyes attendant upon the measles. Laryngitis is sometimes developed during the progress of measles; in this case the complication is a severe one, and likely to have an unfavorable termination. It is said by some authors that measles sometimes occurs simultaneously with

scarlatina and small-pox, and the two affections run their course together. I must acknowledge it would present an interesting medley not common to such affections, and exceedingly difficult to reconcile with our present mode of philosophizing on those diseases. The revolution which a severe attack of measles must necessarily produce in the condition of the system, renders its influence upon some of the chronic diseases apparent and easily appreciated. Thus certain obstinate chronic cutaneous affections have been entirely removed, and never returned after an attack of measles.

The *anatomical relations* of measles have very little of an interesting character. Uncomplicated attacks of the disease so rarely prove fatal that opportunities seldom occur for such investigations. And where death results from other causes than those immediately concerned in the contagious affection, the morbid appearances can not be considered as bearing any relation to the disease itself. So far as investigations have been made in the uncomplicated disorder, the most important changes observed have been found in the mucous membranes and the condition of the blood. The mucous membranes, both of the bowels and bronchiæ, have been found congested. The blood is found to be of a dark or blackish character, and in a fluid state, while the fibrin is generally less than natural, and the red corpuscles it is said, are sometimes in excess.

Cause.—Cases of measles so frequently occur where no investigations can trace their origin to a direct exposure to the generally admitted cause of the disease, as to excite the suspicion that it sometimes has a spontaneous origin. But in view of the many ways in which exposures may occur that might escape all inquiries and means of arriving at the truth, and also in view of the great principle that seems generally to control this class of diseases, viz.: that they are produced by a specific cause, and the only known origin of that cause is direct communication with the existing disease, or with the poison generated during its progress, we should be careful in adopting an opinion so much in conflict with facts that are better known. It is admitted—and it is but repeating a truism—that measles is propagated by a specific contagion, which is capable, like others of this class, of being communicated through the atmosphere without immediate contact. But at what distance from the diseased person it can be communicated is not settled, though no doubt this may be done anywhere in the same room, or in other rooms in the same house opening into the infected room.

It is also certain that it can be communicated by inoculation in various ways. Like other contagious affections its general prevalence is mostly under the influence of epidemic causes joined with the specific cause.

The cold and variable seasons of the year seem favorable to its occurrence, though it frequently prevails in warm weather, and in fact at all seasons of the year. And though it is most common to the young, yet no age is exempt, as it has been known to attack the youngest child, even it is said before birth, and persons just tottering to the grave. Its protective influence from subsequent attacks is an admitted fact, and considered a very general and reliable rule; yet it frequently varies from this rule. I have attended several patients who had two well defined and unmistakable attacks of measles. Which of the contagious affections is least liable to recurrences of the kind it is not generally agreed. The latent period of measles, or the time that elapses from the exposure to the cause, until the manifestation of the first symptoms of the disease, is generally agreed to be about a week.

Diagnosis.—When the eruption is out, the experienced physician will have no difficulty in determining the disease. But during the initial fever, it is somewhat presumptuous for any one to decide positively that it is an attack of the measles. Still, even then the general prevalence of the disease would make it safe to pronounce a case one of measles, more especially if it was known that there had been an exposure, and that sufficient time had elapsed for the appearance of the symptoms. Those who are not familiar with the characteristics of some others of the eruptive diseases, might mistake measles for the early stage of small-pox and perhaps scarlet-fever, while those who are familiar with all the eruptive diseases will have no difficulty in distinguishing between them. In the early stage of a severe case of small-pox the eruption, and, in some respects, the initial fever resemble those of measles. The sore throat, and suffused eyes and cough, that often attend small-pox might be mistaken for measles, and *vice versa*. The fever also is similar; but the severe pain in the back in small-pox, not common to measles, the more marked symptoms of coryza in measles, not so prominent in small-pox, and the harder and more prominent *feel* of the eruption in small-pox, if they are all properly considered, will render it comparatively easy to distinguish the affections, even in their earliest stages. While in the later stages no difficulty whatever can exist, as the vesicles and umbilicated eruption peculiar to small-pox

leave no room for doubt. It is easy for the careful observer to distinguish measles from scarlet-fever; in the latter the whole skin is covered by almost one continuous diffused blush, though close inspection will detect an exceedingly fine spattered appearance.

Prognosis.—Few cases of measles prove fatal; but complicated with an epidemic it is often a troublesome disease, and sometimes may prove fatal, though even in these cases it should rarely do so. Its complication with croup is one of its most serious forms, though even in the membranous form of the complication I should not despair of relief. Formerly, when I was more influenced by the bugbear of inflammation than now, I had occasionally some trouble in permanently determining the eruption to the surface, and I have reason to believe the only case that ever proved fatal in my hands was lost through fear of that phantom.

Treatment.—The most important feature in the treatment of measles is to be sure not to do too much, and to carefully watch the progress of the case in order to recognize the first stage of any complication that may occur. An ordinary attack, where the eruption appears at the proper time, should not be treated with medicine, except mucilages, such as marsh mallows, or fresh slippery-elm, and perhaps an injection to move the bowels if they are costive. The diet should be of the most simple, fluid and farinaceous kind. But if any delay or difficulty should occur in the appearance of the eruption, the experience of latter years has taught me to entirely disregard the old doctrine of inflammatory action connected with the case and to administer warm toddy. Some years ago I was induced to try that remedy in a very obstinate and, as it appeared, an almost hopeless case, in which the eruption did not properly come out, and derived such marked advantage, that I have, in every subsequent case where there was any delay of the kind, pursued the same course, and always with similar effects. An old remedy is milk-punch, but, though I should have very little fear of the spirit, I should not think very favorably of the milk. I prefer a little pure old whisky, mixed with three parts of hot water, and sweetened; it may be given in tablespoonful doses every half-hour to a child two or three years old, until the eruption begins to appear freely, and then suspended, unless the eruption shows a tendency to recede, when I should repeat as before. I have also frequently administered the hot whisky-toddy in severe congestive attacks, in which the eruption was inclined to assume a dark color, and I have seen the eruption in

such cases assume a bright or florid appearance under its use. But I would not be understood as recommending this practice indiscriminately in all cases, but only in the condition of the system I have supposed. In those cases where the eruption has the proper appearance, and the complications present inflammatory symptoms, it should not be used. Only in a comparatively limited number of cases, therefore, will its use be proper.

For the troublesome and irritating cough that so generally accompanies, and frequently follows measles, a valuable remedy is a syrup consisting of a decoction of eupatorium (boneset) thickened with loaf sugar, and given to children in from half a teaspoonful to a teaspoonful at a time, according to the age of the child, every half-hour, or more or less frequently as the cough may seem to require. But this will not be sufficient for some cases. For such, the compound tincture of Virginia Snakeroot, and salad oil, in the proportion of fifteen or twenty drops of the tincture to a teaspoonful of the oil, rubbed up with loaf sugar, may be given to a child a year, or a year and a half old, and repeated two or three times a day; it will rarely fail to afford the desired relief.

When there are clear evidences of pneumonia, the lungs should be examined with care, and the precise seat of the local determination ascertained; then a cup or two should be applied, and followed by hop fomentations as warm as the patient can bear them, and changed every half-hour; care should be taken in changing the applications, not to expose the patient so as to produce a retrocession of the eruption. Wherever the local determination may occur, a somewhat similar course should be pursued, being governed by the circumstances of the case. Should evidences of laryngeal disease manifest themselves, a cup should be immediately applied to each side of the larynx, followed by a soft onion poultice; at the same time the acetous tincture of sanguinaria should be given in doses sufficient to produce slight nausea, guarding, if possible, against vomiting, unless there are evidently accumulations in the stomach, and then it may be given in sufficient doses to produce its emetic effects; or the lobelia and boneset decoction may be given for this purpose. If the determination is to the bowels, hot fomentations and soothing starch injections will generally afford relief in such cases.

In many cases both of the mild and more severe form of measles, the recession of the eruption will be followed by a troublesome diarrhea, not connected with inflammatory action, but with

a high grade of irritation, and will require to be moderately restrained. For this purpose, a thin, small starch injection, with a few drops of the tincture of opium, might be given once or twice a day. Or I have often used as a tonic and astringent, a sirup of blackberry-root, with entire satisfaction. In these cases patients will have to be very careful, for a number of days, in their diet, and as the irritation subsides, return very gradually to the ordinary food. In some cases it becomes very important during the whole course of the disease to keep the room moderately dark, or at least to avoid the glare of a bright light, in order to prevent an attack of ophthalmia. And in some cases the complication will occur in spite of all the care you may take. In such instances the eyes should be washed three or four times a day with a decoction of hydrastis, followed by the warm slippery-elm mucilage.

When the disease presents a decidedly malignant aspect, besides, the stimulant heretofore recommended, administered until the eruption assumes a brighter color, friction with stimulating applications to the surface and extremities should be made, and the system kept up with mild tonics and such stimulants as the case seems to require. In some cases weak brandy-toddy and a solution of carbonate of ammonia might be given, but should be suspended or graduated as the action of the system seemed to require.

The diet in all cases should be of the fluid and farinaceous kind, and the drink either mucilages, or warm diluent diaphoretics, such as balm or spearmint; the latter especially when the stomach is irritable. If a troublesome bronchial irritation should follow measles, our pulmonary balsam and the common cough drops may be taken, as the urgency of the case seems to require. These cases will generally have to be treated with tonics, exercise in the open air, copious bathing, and the use of plain but nourishing food.

VARICELLA, OR CHICKEN-POX.

The unimportant character which chicken-pox generally presents requires for it only a brief consideration. It is conceded to be a contagious disease, and, though of only secondary importance as compared with those of this class that are to follow, I consider it at this time because of its resemblance, in some respects, to the disorders the discussion of which I have just completed.

Symptoms.—It is an eruptive disease, accompanied by a moderate febrile action, which is followed by a vesicular eruption, that

generally dries on the fourth day. The commencement of the disease does not greatly differ from an ordinary slight attack of common fever, if the symptoms are sufficiently developed to be noticed. Frequently a slight chill will be noticed, followed by febrile reaction; but most commonly the febrile symptoms will show themselves without any premonitory complaints whatever. These symptoms, however, are transient, often passing off without any particular attention. A slight eruption first appears on the breast, shoulders, and back, and gradually extends to the face, head, and extremities. It will first be noticed in the form of bright red and conical spots, which shortly become vesicular, and very soon thereafter some of them present a slightly umbilicated character, resembling as near as possible a genuine variola pock. The first appearance of the eruptions is quite frequently attended with a slight stinging and itching sensation, and as they are easily ruptured, those most readily reached are very apt to present rather an anomalous character, which is liable to mislead; but by examining those out of reach on the back their true character will not fail to be observed. You will generally find the eruption in all the stages, from a slight red pimple to a dried scab, evidently having appeared in successive crops. They rarely present the mahogany color characteristic of variola when maturing, but generally exhibit a more yellow or lighter color, like other common eruptions, and on the fourth or fifth day the eruption presents a light pearly appearance, and gradually dries until the eighth or ninth day, when it generally falls off, leaving the surface a light red color, though not cicatrized. In some instances, when the system is considerably out of order, and when the patient has fretted the eruption by scratching, sores of considerable size may follow, and in this event a pit of a rounded shape may be left, which will continue through life.

Cause.—Although the attempt to propagate chicken-pox by inoculation has rarely been successful, I am not aware that any respectable author doubts its contagious character. But it is so mild and harmless a disease, that it has made but little stir, and is not much dreaded. It is no doubt frequently influenced in its prevalence and character by epidemics. Like the other contagious affections, varicella is governed by the general laws of regular stages and decline, as well as in its protective influence against subsequent attacks. It has no known prophylactic, and is generally confined to children.

Its resemblance to variola, in some respects, for a long time led to its being confounded with that affection, though it was believed to be a very mild form of it. But when it was found to differ essentially from genuine small-pox in its character; that it afforded no protection against the latter, did not in the least prevent the successful effect of vaccination, and that neither of the latter diseases prevented the occurrence of chicken-pox, it was at length determined that they were two distinct diseases. But when the varioloid became better known, though before its true character was determined, and its proper place in the rank of diseases pointed out, varicella was for a time believed to be allied to it. But it is now determined to be a *sui generis* affection, having its own cause, and governed by that cause, but coming under the general rules of contagious diseases.

Diagnosis.—There is no affection except small-pox in its mildest forms, and the varioloid, for which varicella is liable to be mistaken. But the history of the attack, and the symptoms of each, if carefully observed, will readily determine the question. The initial fever in chicken-pox is much shorter and less severe, without that peculiar pain in the back so characteristic of variola; and the different stages of the eruption are much shorter. The close resemblance of some of the pocks to those of variola may embarrass an inexperienced eye, yet in the main the difference is readily observed. But if any doubt remains, you will immediately discover the difference by puncturing a few of the vesicles, which, also, have a softer feel than in variola. In small-pox or varioloid the vesicle is so completely cellular, except in those pocks that have passed into the stage of suppuration and become sacculated, that puncturing does not diminish its size, and only a small drop of limpid fluid gradually exudes; while in varicella the eruption is not cellular, or only partly so, and puncturing diminishes its size, and furnishes immediately a free supply of fluid.

Treatment.—Varicella, like the other contagious disorders, is a self-limited affection, and usually so mild that medicine is not required to render the patient more comfortable, or prevent any local determination. About all that is necessary, is to see that the bowels are open, and to restrain the demand for food, so that the system, being free from any embarrassment, may go through the several stages of the disease, without any subsequent local or general difficulty. A simple farinaceous or vegetable diet, and confinement to the house for a few days, is all that is generally neces-

sary. But if any unusual amount of fever, or derangement of the stomach should complicate the case, a gentle physie may be required. Seidlitz powders will answer the purpose, or if the stomach is irritable the neutralizing physie may be given until it operates upon the bowels.

PAROTITIS, CYNANCHE PAROTIDÆA, OR MUMPS.

The conventional term, Mumps, is the least exceptionable to designate the *specific contagious disease affecting the parotid gland*, as it does not literally express or suggest any thing connected with the disease except the manifestation of dullness usual to it, and the meaning is well understood both in the profession and out of it, while the other terms, taken strictly, convey an erroneous notion.

Symptoms.—This disease, like the other contagious affections, is amenable to the laws of regularity in its stages of rise, progress and decline, requiring about two days for its full development, and continuing for about two more, when it begins to decline, and entirely or mainly disappears at the end of a week from its commencement. It is located in the parotid gland at the angle of the jaw, directly in front and below the external meatus of the ear, and commences with a slight stiffness in moving the jaw. The swelling progresses rapidly to its full development, rendering it somewhat difficult to open the mouth, and sometimes involving the act of swallowing in some difficulty and pain. In persons subject to earache it is very liable to excite that difficulty, and produce great suffering. It is sometimes confined to one gland, but most commonly affects both at the same time, though in some instances the contagion affects one gland first, and is afterward propagated to the other in due time for the lapse of the latent period. It thus not only manifests the usual character of contagion, but shows that the specific influence is confined to these particular glands, and does not originate in the general system; otherwise the first infection should involve both glands at the same time.

Mumps can scarcely be said to be an inflammatory disease, since its termination is not subject to any of the results usual to inflammation. And though the general attendant symptoms seem to countenance the doctrine of inflammatory action, yet if there is any it is so entirely specific as to mainly remove it from its relation to that class of affections. Accompanying the active stage

of the disease, febrile symptoms are more or less prominent ; also, heat and dryness of the skin, accelerated pulse, furred tongue, costive bowels, and high colored and scanty urine. These symptoms vary, in some cases being quite prominent, but in others so slight as scarcely to be noticed, and in most not so severe as to confine the patient to bed or even to the house. The swelling also differs in different cases, in some being so slight as to be merely visible, while in others it is so great as to amount to temporary deformity. It is always accompanied by increased heat of the part, and from the induration that sometimes supervenes we can scarcely doubt that, in such cases, a degree of inflammatory action exists. This, however, is met with in but few cases, and we are led to infer that, when present, it is an accidental concomitant, and that the true nature of mumps is not inflammatory. It seldom exhibits any discoloration, and rarely terminates in suppuration.

Metastasis of Mumps is one of its most striking characteristics, and more distinctly than any other symptom marks it as being of a nervous character. It rarely occurs during the active stage of the disease, but most frequently takes place as the original swelling subsides. In males it goes to the testicle, and in females to the mammary gland, though it sometimes falls upon other organs or parts not having any glandular function, as the brain and some other parts of the system. Metastasis sometimes occurs during the more active stage when the individual is much exposed to cold or wet, and when it follows the decline of the disease it is generally the result of imprudent exposure too soon after the decline. Corresponding to the other contagious affections, mumps rarely occurs twice in the same person, except when the disease has affected only one gland in the first attack. The immunity thus afforded is, perhaps, more complete in this affection than in most others of the class, as second attacks are not so frequent as in the others.

Treatment.—Unless there is some unusual severity, and except in cases of metastasis, no treatment will generally be required. If, however, the local and general symptoms are more severe than common, a light physic, abstinence from eating and from exposure of the parts, and a flannel bandage over the swelling, are all the measures that will be required. It may be desirable in some severe attacks to administer a pretty active cathartic, when the tongue is thickly coated and the bowels costive. In that case the

compound tincture of senna and jalap, with cream of tartar, may be given in drachm doses each, and repeated if necessary. Or if a less active and more cooling cathartic is required, a dose or two of Seidlitz powders may be given.

But the main point connected with the treatment of mumps is to understand the proper management of the translated form of the affection. This is readily done. If the disease has been transferred to the testicles, the patient must be kept entirely quiet, and a suspensory bandage so adjusted as to prevent the weight of the testicle from straining the cord. Or if the patient is in bed, as it is best he should be for a few days, by placing the limbs close together, the testicle can be so arranged as to take off the weight, and also be in a more convenient position for the applications suited to the case. I have tried various local applications for these cases, but find none to afford any thing like the immediate relief which I have always derived from the application of the hot hop-fomentations frequently changed. They will rarely fail to afford immediate relief to the pain and suffering, and be followed by a gradual decline of the swelling. They should be applied as hot as they can be borne, and changed once an hour. [Decoet equal parts of hops, wormwood and stramonium, in equal parts of vinegar and water. Put the whole, steaming hot, into a suitable vessel, and let the patient sit over it for fifteen or twenty minutes; then apply the herbs as a fomentation.—S.] I have also generally directed the simultaneous application of a mustard poultice to the original seat of the affection, with the ostensible view at least of inviting back the disease to its former place. Nevertheless I have much doubt whether it has any special beneficial effect, as I have never witnessed any evidence of the return of the disease. With these local measures, it will also be necessary to resort to the use of free evacuations. The physic before directed will be as effective as any, and should be given, and repeated if necessary, until it operates freely.

Metastasis to the brain should be treated with thorough revulsive applications to the extremities and the spine, cupping the temples, and a more thorough operation of physic.

LECTURE LXXX.

CONTAGIOUS DISEASES.—CONTINUED.

Pertussis, or Hooping-Cough: Course and Symptoms; Diagnosis; Prognosis; Nature; Treatment; Use of Belladonna.

PERTUSSIS OR HOOPING-COUGH.

Although in placing hooping-cough in this connection it may appear to be removed from its natural relation to other affections, yet it strikes me that this is more apparent than real when the nature of the disease is properly considered. It certainly can not be looked upon as an inflammatory disorder, and, therefore, is not allied in this respect to the ordinary diseases of the air-passages. It is true its most prominent characteristic is manifested in connection with those organs; but so it may be said of measles and small-pox that their most prominent symptom is disease of the skin; and yet those affections are never considered in connection with other skin disorders. The arrangement I am following has the recommendation of grouping together diseases which have similiar laws and leading characteristics, although they may be very unlike in their symptoms.

Course and Symptoms.—Hooping-cough is a contagious disease, occurring at any period in life, though mainly confined to children, and is characterized by a unique, spasmodic cough, with protracted and sonorous inspiration, and short, imperfect, but rapid expiratory efforts. Like the other contagious disorders, hooping-cough appears to have its regular stages, described by modern authors as being three, viz.: the stage of invasion, the spasmodic stage, and the declining stage, answering very fairly to the rise, progress, and decline which I have elsewhere considered among the characteristics of contagious diseases. The latent period of hooping-cough also corresponds with that of other disorders of this class, and may be considered to be about two weeks, at which time a slight dry cough begins to be observed, without any other symptom. I do not feel justified, from the observations I have been able to make, in concurring with the statement made by the books, that

hooping-cough commences with the ordinary symptoms of a cold,—"coryza, sneezing, and slight injection of the conjunctiva." When it occurs simultaneously with an epidemic influenza, the early symptoms will be such as characterize colds; or if the patient happens to contract a cold at the period for the first development of this affection, the commencement of hooping-cough will be the "ordinary symptoms of simple catarrh." But in its uncomplicated character it has not been observed by me to commence with the symptoms referred to, and this accords with the local manifestation of the disease. We certainly are not in the habit of looking to the nasal cavity, nor to the conjunctiva, for the location of the specific disease, nor is the disease of those parts a necessary complication with the affection.

The cough when first observed is dry and hacking, and increases in the same way without any peculiarity that can be noticed. In fact it is not for a week or more that any paroxysmal recurrences or spasmodic manifestations, characteristic of hooping-cough, will be observed. But at length the cough manifests an unusual tendency to return at stated periods, or rather at distinctly irregular periods, and when thus recurring, exhibits far greater severity than is usual to common colds. At this stage a slight general disturbance will be manifest; greater irritability, and some drowsiness or dullness will be noticed, and if the case is examined, some excitement of the pulse, and frequently more than ordinary warmth of skin, will be felt. With these symptoms the characteristic cough will generally take place, though it is not perceived at every paroxysm. The transition is so gradual, and the increase of the cough is so imperceptible from day to day, as scarcely to be observed, and the peculiar hooping sound of the cough sometimes continues for several days without any suspicion of the true difficulty. This period of the disease varies in length, owing somewhat to its complication with cold, or its connection with an epidemic, as, in such cases, it may be hastened to its development. But the characteristic cough generally commences about the end of the second week.

At the beginning of the stage, during which unmistakable evidences of the disease are observed, the most marked symptoms of general disturbance that take place in the course of an uncomplicated attack, will exist. In many vigorous and hardy children, these general symptoms will not be noticed, and the case may go through without any evidence of disease except the cough; but

in more delicate and nervous cases, they will be apparent, and often require some attention. The tongue will be found coated, the bowels costive, and there will be a slight increase in the frequency of respiration, some accelerated arterial action, and a more dry and husky condition of the skin. At this stage the cough is more impetuous and uncontrollable, consisting in a quick succession of short hacks during one expiratory act, which continue to the last possible stage of the expiration, and seemingly produce an entire exhaustion of the system; but suddenly a violent inspiration occurs, accompanied by the characteristic *hoop*, which is followed by another series of exhausting hacks, or efforts to cough. Thus a number of these efforts follow each other in rapid succession, and constitute a regular paroxysm, during which the face becomes flushed, swollen, or purple, and often, in severe cases, hemorrhage from the nose takes place, and the patient is greatly exhausted. In most cases a mucous secretion more or less free occurs at each fit of coughing, which seems to check the cough, and sometimes still greater relief is afforded by free vomiting. These paroxysms come on at any period, either during the day when the child is playing, or at night when quietly asleep, but are most liable to occur from the excitement of play, or from a fit of crying. If it comes on at night, the child is a little uneasy at first, and then is suddenly roused by a sense of suffocation, and starts up in bed; or, if at play or standing about, immediately seizes hold of something to keep from falling. The paroxysm lasts in some cases but a very short time, but in others continues for a number of minutes, so that the patient is very much exhausted. But it is a mere temporary debility, the patient in a short time resuming his plays or other engagements with ordinary sprightliness. If it occurs in the night the patient is scarcely roused to a complete state of consciousness, and the moment it is over drops off into a sound sleep.

Thus the disease progresses, gradually increasing in the severity of the paroxysms, frequently with an aggravation of all the attendant symptoms till about the sixth week, when it will gradually subside, and if no untoward circumstances occur, and the child does not take cold, at the expiration of six weeks more the disease will have disappeared. It may therefore be said to occupy about three months from its first manifestation to its entire decline; nor can it even then be said to have lost its influence upon the system,

as it often recurs for two months or more longer, with its characteristic paroxysmal symptoms, upon taking cold.

The course and symptoms I have described relate to ordinary and average cases of well developed whooping-cough; but it will often present great variety in these respects, sometimes appearing in a much milder form with scarcely any symptoms more severe than a common cold, and in fact sometimes the only especial evidence of the disease is its protracted character. But in other cases the symptoms are far more severe and the paroxysms more frequent. The eyes often become bloodshot, and a dark, sanguineous effusion takes place under the eyes, and it is said that hemorrhage from the ears occasionally, and from the nose very often, occurs during the progress of a case. In some instances the urinary secretion is discharged at every fit of coughing, and a discharge from the bowels occurs at the same time. In some cases the paroxysm is so protracted and severe that the child presents a purple appearance, and in one instance in my experience the hacking expiratory act was so long, and the system so completely prostrated, that the accumulated carbonaceous matter in the blood paralyzed the nervous system so as to prevent the inspiratory effort, and the child died in a state of perfect asphyxia. In most cases, however, whether mild or severe, in the interim between the fits of coughing the child appears quite well (except when the eyes are congested), and is usually found participating in all its ordinary plays and amusements. But in some cases the sympathetic relations of the system are such as to develop any latent disease that may exist, and debility and exhaustion ensue. Sometimes the effort at coughing excites irritation of the lungs, and an active pneumonia may occur that always proves a troublesome complication to encounter. In such cases the recurring paroxysms of cough aggravate the existing inflammation in the lungs or bronchial tubes, as the case may be, and the inflammatory action tends to produce a troublesome cough in itself, which provokes a more frequent return of the whooping-cough. These complications will be accompanied by the usual symptoms of such attacks, as shown by a physical examination of the lungs, etc. It is not uncommon for nervous children to be thrown into severe convulsions during a paroxysm of coughing. The vomiting that frequently accompanies whooping-cough should hardly be looked upon as a complication, since it may generally be considered a

favorable symptom, and children affected with it rarely have the disease as severely as others that are not affected in this way.

But in tuberculous or strumous constitutions the disturbance of the lungs, consequent on severe and frequently recurring paroxysms of coughing, is very liable to set up an irritation in the pulmonary organs that produces obstruction in some of the air-vesicles of those organs, and thus form the nucleus for tuberculous deposition that may end in true phthisis. Or the irritation may be confined to the bronchial mucous membrane, and thus establish a chronic disease to be followed by a troublesome, lingering cough, attended by debility and emaciation, and finally terminating in bronchial consumption. But if, in some of these scrofulous cases, a disturbance of the bowels is produced from any cause, a disease of the mesenteric glands will follow, and ultimately terminate in marasmus. Severe paroxysms of coughing are also liable to produce slight rupture of some of the air-cells, thereby allowing the escape of air into the inter-vesicular cellular substance of the lungs, and thus producing emphysema that may ultimately be found a troublesome difficulty to manage.

Diagnosis.—The diagnosis of hooping-cough is difficult only in the early stage of the disease before the development of its characteristic cough and hoop. And fortunately there are no circumstances directly connected with the welfare of the case that render a determination of the question of any special moment. It may, however, be important in some cases, as connected with the movements or business arrangements of interested persons, to settle the question at an early stage. But all that can be said on the subject is that we must rely on the whole phenomena of the case. We have no specialities to refer to, and no one circumstance that might not readily be explained in connection with other diseases. The slow progressive increase of the cough without evidences of "cold," the absence of general or local symptoms to account for it, the general previous good health of the patient, and especially the previous exemption from cough, all taken together, will give an aspect to the case that may in some measure be relied on. It must be confessed, however, that these circumstances may all fail to afford a correct index to the case, and totally disappoint our diagnosis.

Prognosis.—Although a lingering disease, and often a severe and distressing one, hooping-cough rarely proves fatal. But it does occasionally have an unfavorable termination, not only from the

lingering complications that frequently follow in its train, but also, occasionally, from its direct influence upon the system. Both of these cases, however, are rare, and from their peculiarity in this and other respects, can neither be foreseen nor well guarded against. We must therefore place such cases among the casualties of life over which science has but little control. The more important the organ involved and the greater the gravity of the attack, the greater is the liability to prove fatal. The condition of the general system also has much influence, not only in conducing to local determination, but also in the probable termination of the case. Thus, tuberculous constitutions will be more likely to result in serious complications than systems exempt from this morbid condition. But in view of the whole case, with timely and appropriate treatment, the prognosis of hooping-cough may be pronounced favorable.

The intimate *nature* of the disease is not fully determined upon by the leading members of the profession. Still I think a fair inference is deducible both from the phenomena of the disease, and the absence of any local anatomical lesions resulting from it. The character of inflammatory affections is so entirely different from any thing ordinarily presented in hooping-cough that we are not in the least authorized to consider the latter as in any respect belonging to that class. The almost entire absence of any lesions suggestive of diseased action of the kind confirms this conclusion. The question then recurs, if it is not inflammatory, what is the character of the morbid actions manifesting symptoms so striking and often so violent? It is scarcely probable that a disease having such prominent local symptoms should not be connected with some kind of morbid action in the parts thus affected. Nor is it probable that a disease manifesting so much of disturbance in certain parts of the system would exist without some alteration in the vitality of the organ involved. It is very true that, in the present state of our knowledge, we may have but an imperfect conception of the condition of a part in which the nerves are involved without any apparent alteration of structure. But in the absence of any local structural lesion, with manifestations of violent disturbance of function, we are clearly justified in concluding the affection to be of a nervous character. These are, it seems to me, natural and sound views. Hooping-cough then I think, may with great propriety be classed among nervous affections, producing reflected irritation in the larynx far short of inflammatory

action, as shown by the slight alteration from the natural condition of the parts.

Treatment.—For the last eighteen years, I have used no other medicine, in the uncomplicated cases of whooping-cough, than belladonna. And such is my confidence in the curative effects of this remedy, in all stages of the affection prior to the stage of decline,—when its use would scarcely be advisable,—that the only inquiry I have of late years been in the habit of making, is whether it is a clear case of whooping-cough, and is free from other serious complications. I am fully convinced that, if the remedy has failed in the hands of other physicians, it has been owing either to the use of a spurious preparation of the drug, or to its improper administration. The apparent effects of the medicine upon the system suggested its incompatibility with much febrile action, and I have accordingly first made use of appropriate means to remove the fever when found to exist, at least in a measure, before commencing with the belladonna. And here permit me to remark that the extract of belladonna sold in the shops is often of an inferior quality, and not at all reliable in this affection. I have, in several instances, had occasion fully to test the correctness of this statement. I have found the best alcoholic extract generally reliable, and hence have lately always procured that preparation. Another important consideration in regard to its curative influence is, that the specific effects of the medicine must be realized every day while it is being administered.

I have generally used the following formula :

R. Alcoholic ext. belladonna, ʒi.
 Water, fʒiss.
 Rect. spirit, fʒi. Mix.

This I commence giving in doses of twenty drops to a child two years old. But before directing the particular mode of its administration, I will remark that its effects upon the system, when administered to the extent of its specific action, are to enlarge the pupils of the eyes, and generally produce a distinct flush upon the skin, or at least upon the face and neck, resembling scarlet-fever. The pure and reliable preparation has always, in my hands, produced both of these appearances, making the patient at the same time dull and sleepy. These effects are not imaginary, for I have witnessed them in some hundreds of cases. The enlargement of the

pupil is considered its pathogenetic effect, though with me the two phenomena have appeared at the same time. In giving directions however I advise the discontinuance of the medicine when the effects are observed on the pupils of the eyes, without waiting or even looking for the effect upon the skin. So, also, if the dullness of the patient and the flush on the skin are observed, I advise no further search for its action on the pupils.

In the first place, then, it becomes a matter of importance to correctly observe the size of the pupils of the eyes previous to administering the medicine. It should be remembered that light affects the size of the pupils, and it is therefore indispensably necessary, in order to arrive at correct conclusions, that the patient should be placed in the same light after as before the medicine is given. In other words, if the eyes are examined before a window, prior to the use of the medicine, the same position should be taken afterward. The effect of the medicine will generally be manifest within an hour after it is taken, but to guard against any cumulative tendency and the consequent risk of giving an overdose, I have always advised it to be repeated only once in three hours. In this way I have never witnessed any but the desired action, and have therefore every reason to suppose it safe. Though the medicine is a narcotic, and among the most powerful of that class of therapeutic agents, yet the harmless and evanescent symptoms which it produces before its more powerful and dangerous ones can occur, render its administration as safe as that of any of the class.

The following is the method to be observed in the administration of the remedy. Commence in the morning with fifteen drops to a child one year old, twenty-two drops to one two years old, or twenty-five drops to one four years old; and if at the expiration of three hours its specific action is not manifest, it should be repeated, adding from three to five drops, and so on repeating and increasing at the expiration of every period of three hours. But as soon as its effect is apparent, either in the enlargement of the pupils, or from the flush on the skin, it should be suspended for that day, and commenced again the next morning. The dose on the next morning should be the same in quantity as the last one on the day previous. In this way you will obtain the point of toleration with entire safety, and when the amount necessary to affect the system is ascertained, it must be given but once a day; though

its effects should still be looked after, and if the dose first found sufficient does not continue so, increase it; or if its action prove rather too much, diminish it.

The time required for the medicine to be continued before the disease is broken up varies somewhat in different cases. The shortest time I have ever known was three days, when the cough was so far arrested that it was not thought necessary to continue it. This was the case with two sisters, whose cough was almost entirely checked at the expiration of three days. But the time varies from three to fourteen days; eight or ten days perhaps being an average. Its administration should be regular and continuous. The first two or three days no effect upon the cough is generally observable, but by the third or fourth day the paroxysms will occur less frequently, and by the next day will be neither so frequent nor so severe, and thus will gradually disappear, and sometimes rapidly, after the first impression.

It has been suggested that so sudden an interruption of the cough might interfere with its protective influence upon the system, and thus barely put off the evil day. My attention was called to this subject at an early period in my experience with it, and I have not yet known an individual to have the disease a second time who had been previously treated with belladonna. The two little girls, before mentioned, who took it only three days, are now young ladies, and though exposed a number of times have never since had the disease. When the paroxysms are light and short, and the child does not seem to mind it, but is playful as usual, the inconvenience of administering the medicine might be greater than that of the disease itself. In such cases my usual course has been, especially in the summer time, to let them alone.

If the belladonna should not prove, in the hands of others as it has in mine, a reliable and effective remedy, the old mode may be employed of palliating the disease, and, after relieving the urgent symptoms, of allowing it to go through with its natural course, uninterrupted and in its own way. The measures in this event, that may be necessary, depend upon contingencies. Few remedies exercise a more sensibly palliative influence than occasional light doses of lobelia, to the extent of moderate vomiting. This will be more especially applicable in those cases where a large amount of viscid mucous secretion occurs without spontaneous vomiting, and where there is difficulty in discharging it. For these cases I was formerly much in the habit of using the tincture of

lobelia and *asclepias tuberosa* in equal parts, given to a child a year or two old in drachm doses, and repeated every ten minutes if necessary, not for the purpose of keeping up long continued emesis, but to unload the stomach, relax the spasm, and discharge the tough mucus lodged in the throat. In this way it may be repeated every second day, or even every day in severe cases, until the symptoms are in a measure relieved. It is sometimes useful also, to keep the system under the influence of a moderate expectorant, and to produce slight nausea in very severe cases, for a number of days. For this purpose the alcoholic extract of lobelia given in drop doses to a child, one or two years old, on a small lump of loaf sugar, and repeated every two hours, and the *asclepias* tea, freely used will be found excellent remedies.

It is always important, in all severe attacks of whooping-cough, to keep the bowels open if they should be inclined to be costive. And there is probably no preparation that will answer a better purpose in this respect than the compound powder of rhubarb; while it fulfills all the curative indications that can be expected from the old and far-famed potash and cochineal preparation. It should be given in tablespoonful doses of the infusion two or three times a day, or sufficiently often to answer the purpose. An acid condition of the system generally predominates in whooping-cough, as will usually be apparent from the odor of the evacuations and the condition of the stomach. In such cases if the bowels are not costive, and especially if they are relaxed, the neutralizing medicine just mentioned will be found an excellent remedy, given however in rather less doses than for the other purpose.

Various other remedies have been recommended, and perhaps some of them possess some palliative properties, though, so far as I have observed, those that I have referred to have been found to possess all the palliative influences claimed for others. Hydrocyanic acid and strychnia, in suitable doses, have been used, but as I have had no experience with them in this affection I refer you to the books. Alum has been highly recommended in severe cases of whooping-cough, and indeed some authors seem to think it has advantages in this disease as a palliative, almost amounting to a curative, that few if any remedies possess. Dr. Meigs speaks of it in terms of praise that entitle it to a favorable consideration. I have seen it used in a few cases with some benefit, but not with the marked advantage resulting from the lobelia and the neutralizing medicine. The alum is given in doses of from half a grain to two grains,

according to the age of the patient. For very nervous children, an infusion of asafœtida will be found a very valuable antispasmodic and sedative, and may be given in teaspoonful doses every two or three hours.

The complications that may occasionally occur will require the usual treatment, with such modifications as the condition of the system may indicate to be proper for these affections. For inflammation of the lungs, which is perhaps the most serious concomitant of whooping-cough, cupping should be resorted to, and the internal use of such other remedies as may be thought most appropriate, among which are occasional moderate lobelia emetics, and the frequent use of sanguinaria sirup as a sedative and expectorant. After these, the whole anterior portion of the chest should be covered with a folded towel wrung out of cold water, and changed often enough to keep it moist. I have known this in a number of cases to have a most excellent effect.

It often becomes necessary in the advanced stage of the disease to make use of mild tonics and restoratives. Of these an infusion of wild-cherry is one of the best, and the decoction of peach-leaves or bark possesses similar properties.

A troublesome, irritating cough frequently follows those cases of whooping-cough, in which the lungs have become involved during its progress. In such cases I have found the compound tincture of Virginia snakeroot and salad oil, rubbed up with loaf sugar, and taken at night, or if necessary through the day, more frequently useful than any other remedy I have ever used. From fifteen to thirty drops, of the tincture, with a teaspoonful of salad oil and a sufficient quantity of loaf sugar, may be given.

The diet in all cases which require interference, must receive particular attention. Plain simple food in all cases should be preferred, while in the more severe cases very mild and farinaceous food, for a time at least, should be prescribed, and the patient kept as quiet as possible, in order to avoid the paroxysms as much as possible. An abundant supply of fresh air is necessary, but the night or damp air should be avoided, and the patient kept as free from excitement as may be.

[When there was considerable fever and restlessness, I have found the following a good prescription :

R. Tinc. Belladonna, f3j.

Tinc. Aconite-root, f3ss.

M. S. Give three drops every two hours in a little water.

Dr. Arnold of Montreal has recommended nitric acid in pertussis with a view "to introduce the elements of the atmosphere into the blood by the process of gastric digestion, so as to enable the lungs to out-stand the stage of temporary asphyxia which is induced during the severe paroxysm." Dr. Young (*Dublin Hos. Gaz.*—Dec. 1856), regards nitric acid to be "almost as effectual a remedy in pertussis as quinia is in ague." He says "it is antispasmodic in its nature, a powerful tonic, antiseptic in a high degree, and it allays the dyspepsia and the usual tendency to sickness and vomiting."

It may be given according to the following formula:

R. Dilute nitric acid, f3iss.
 Comp. tinc. cardamum, f3iij.
 Simple sirup, f3iijss.
 Distilled water, f3j. M.

S. Give a teaspoonful every hour, or every second hour.

If the child is two or more years old the dose may be larger.

The mouth and throat should be cleansed with a solution of soda after using the acid, to prevent injury to the teeth.

Dr. P. J. Hynes (*London Lancet*, July, 1856), speaks highly of the following prescription as a means of cutting short pertussis:

R. Tinc. of bark, f3ss.
 Tinc. cantharides, f3iij.
 Comp. tinc. opium, f3ss. M.

S. A teaspoonful to be taken three times a day in a tablespoonful of linseed tea.

He generally used in conjunction with this, a counter-irritating embrocation upon the neck. S.]

LECTURE LXXXI.

CONTAGIOUS DISEASES.—CONTINUED.

Typhus Fever: Synonyms; Premonitory Symptoms; Symptoms during the Fever,—Heat, Pulse, Condition of Alimentary Canal; Thoracic Symptoms; Nervous Symptoms; Stupor and Coma; The Countenance; State of the Senses—of the Muscles; The Cutaneous Eruption; The Blood; Forms and Varieties; Convalescence; Duration; Anatomical Changes; Causes; Diagnosis; Prognosis; Nature; Treatment.

TYPHUS FEVER.—BY THE EDITOR.

IN accordance with the promise contained in a note at the end of Prof. Jones' Lecture on Congestive Fever, Vol. I., page 374, a brief description of Contagious Typhus Fever is introduced in this place by the Editor. Much of the information contained in this lecture, is derived from Dr. Bartlett's Work on Fevers.

Synonyms.—Various names have been applied to this disease, some of which have been suggested by the properties or symptoms of the malady, and others by the localities or situations in which it is apt to prevail. Hence it is known by the terms—*Contagious Typhus, Malignant Fever, Putrid Fever, Petechial Fever, Hospital Fever, Jail Fever, Camp Fever, and Ship Fever.* Some writers who insist on a close affinity between Typhus and Typhoid Fevers, designate the former as *Typhus Cerebralis*, or *Nervosus*, from the predominance of nervous disorder during the progress of the disease and the frequency of cephalic lesions found after death; and the latter as *Typhus Abdominalis*, in consequence of the peculiar intestinal disease by which it is characterized.

Premonitory Symptoms.—The access of typhus fever is sometimes sudden, or preceded by very brief premonitory indisposition. It is said that in some instances persons apparently in full health, while inhaling the effluvia arising from typhus patients, have been suddenly seized with nausea, giddiness and muscular weakness, and compelled at once to take their beds. In some cases these symptoms have subsided under the influence of pure air, a warm bath, and a change of clothing; but in others they have been fol-

lowed immediately by typhus fever in its gravest form. It is probable that in the cases last mentioned, the typhus contagion had already occupied the system long enough to pass through its incubation, and that the depressing influence of the last exposure acted as a powerful exciting cause. More frequently the development of the disease is somewhat insidious and gradual. In other words, its access is preceded by lassitude, a sense of weakness and fatigue, a sallow duskiness of the skin, a dull appearance of the eyes, an expression of dejection in the countenance, a dull heavy feeling sometimes amounting to pain in the fore part of the head, deficiency of appetite, a tendency to nausea, an inexplicable feeling of anxiety when awake, an inability to obtain quiet and unbroken sleep, and a tendency to slight but frequently repeated chilliness. These, which may be called premonitory symptoms, may continue from a few hours to five or six days before the disease is fully inaugurated; and it is possible that under favorable circumstances a vigorous constitution may experience them and still be able to rid itself of the poison, and not be brought down at all.

Symptoms during the Fever.—It is not necessary to enter into a formal description of all the symptoms that belong in common to typhus and other forms of fever; but it will be sufficient to designate those that are generally regarded as characteristic of this disease.

There is sometimes no chill to indicate the access of the fever. Generally there is slight chilliness of some considerable duration, sometimes there is a well marked cold stage. The *heat* in typhus fever is peculiarly pungent, communicating to the hand when kept some time in contact with the patient's skin, an aerid, burning sensation which may remain for hours unless the hand be washed. Sometimes the disease runs its course without any increase of heat, but generally the actual temperature is high, ranging in the average of cases from 101 to 106, and in some instances reaching 109 degrees Fah. The skin is usually dry as well as hot, and when otherwise the moisture is a kind of clammy exudation.

This peculiar pungent or biting heat, which is designated by some writers as the "*Calor Mordicans*" (*calor* heat, *mordax* biting), is said to be very remarkable in some epidemics. It is generally somewhat periodical, being less in the morning and increased in the evening. In some cases it entirely subsides, and then returns at irregular periods. It is usually more intense during the first week than afterward, and toward the termination of the disease

gives place to a coolness of the surface, often considerably below the natural warmth.

The *pulse* is generally very frequent, soft, small, feeble, and sometimes irregular. If somewhat full and strong at first, it is gradually diminished in volume, and more rapidly in force, as the febrile movement progresses. The pulsations in the average of cases is from 110 to 120 in the minute. Instances however are given where it was less frequent than in health, while in many cases it is too rapid to be counted.

This condition of the pulse indicates great feebleness in the heart's action, and recent writers particularly advise auscultation of that organ. The first sound of the heart is said to be greatly diminished in many cases, and sometimes apparently suppressed (*Stokes*). This feebleness of the heart may always be regarded as evidence of a general state of depression.

A peculiar odor—pungent, ammoniacal, and offensive—usually arises from the persons of typhus patients, which is by some writers regarded as diagnostic of the disease. It is particularly noticeable in severe cases, and especially if the patients are fat or plethoric. It is an early symptom, increases as the fever progresses, and toward the termination of fatal cases often resembles the fetor of putrid animal matter.

The *alimentary canal* is variously affected in typhus. The *tongue* is generally white and moist during the first week, but gradually changes to brown, and becomes dry, especially in the middle. In mild cases it undergoes little change, but in those of more severe grade it not unfrequently becomes dry, glossy, cracked, trembling, and red, brown or even black. In some cases the whole tongue is bare and raw, resembling a piece of fresh, lean beef; in others the edges and tip present this appearance, while the middle line and base are covered by a dark, tenacious and dry fur. As the tongue becomes dry, *sordes* generally appear on the teeth, gums, and lips.

The functions of the *stomach* are impaired from the first, as evinced by loss of appetite. In some cases there is nausea and vomiting, though these are by no means constant symptoms. A morbid desire for food sometimes occurs a short time before death. It is said that cases have occurred where the patients retained their appetite, and received solid food throughout the course of the fever. The *bowels* in a majority of cases, are constipated both in the mild and the severe forms of the disease. They do not usually respond readily to aperient doses of medicine, and spontaneous looseness

is very rare. The alvine discharges whether obtained by medicine or occurring spontaneously, are seldom watery or light-colored, but are usually dark-colored, and often of a pitchy or unctuous character, and a black or greenish color. They are not usually attended with pain, but often relieve the distress produced by previous constipation. Hemorrhage from the bowels very seldom occurs. Tympanitis is rarely present, and when it does appear it is but slight; and there is seldom much tenderness under pressure, in any part of the abdomen. The occurrence of inflammation or much irritation would of course be attended with tenderness; and this sometimes occurs in typhus as in other fevers, but is by no means a usual complication. There is sometimes tenderness in the region of the liver.

The *thoracic symptoms* in typhus are often very prominent, such as precordial oppression and sighing in the early stages, and cough as the disease progresses. The respiratory movements are generally very frequent. The cough is sometimes an early symptom and is usually attended by a somewhat copious, viscid expectoration. The most common physical signs of thoracic disorder occurring in typhus are a feeble and imperfect respiratory murmur in the anterior part of the chest, with some dullness on percussion; and there are often present either with or without the preceding the subcrepitant and mucous rales. In short there are often signs of bronchial inflammation more or less obscured by a congested condition of the pulmonary tissue.

Nervous Symptoms are among the most constant and prominent that characterize typhus fever. They early make their appearance, generally even during the premonitory indisposition, and usually attend the case, often with constantly increased severity, to its termination. They are so numerous and varied that any brief account of them must necessarily be very imperfect. *Pain* in the head, back and limbs is generally among the first symptoms of which the patient complains. Headache especially often constitutes a most prominent symptom. This is usually located in the forehead and is generally very acute, though sometimes it is dull and attended with vertigo. The *mind* of the patient is generally dull or confused and wandering in the beginning or at an early period, and this state is either deepened into a state of stupidity from which the patient can not be roused except with difficulty, and into which he immediately relapses after having been aroused, or it assumes the form of a low muttering delirium which finally sub-

sides into stupor or coma. In some cases these states of delirium and of stupor alternately succeed each other as the intensity of the fever varies; the patient being delirious and given to incoherent mutterings when the fever remits, and becoming stupid or even comatose when the fever rises. In some cases the intellect wanders from the very onset, but in a majority the delirium first occurs during the second week. Occasionally a very mild case occurs in which no mental aberration is observable at any period. In a very few instances the delirium is turbulent and noisy; but generally it is mild and passive, being manifested chiefly by broken sentences, incoherent words and efforts to leave the bed, remove the bed clothes, etc.

I have spoken of *stupor* and *coma* as conditions of the patient. By the former of these words is meant a tendency to drowsiness or somnolence. This is almost always observable at an early period even in the mildest cases and gradually increases until about the middle of the disease, when it may begin to decline, but seldom disappears entirely until convalescence is somewhat advanced. But in cases that are to prove fatal and in some severe cases that recover, the stupor passes into a state of complete coma. In some cases that peculiar condition is observed which Dr. William Jenner calls "*coma vigil*," "in which the patient lies with his eyes open, evidently awake, but indifferent or insensible to all going on around him;" a state which does not, according to Dr. Flint, predispose to true *coma*.

The *countenance* exhibits a dull, stupid expression, and has a remarkably unnatural look peculiarly characteristic of typhus. The eyes are heavy, conjunctiva injected, and the whole surface of the countenance has a dull livid or dark red color, in some cases approaching purple. This darkened, somber appearance of the skin and eyes, with the dreamy, confused and stupid expression have led some writers to describe it as resembling that of a drunken man just aroused from sleep. As the disease declines this dusky red color gradually fades into a muddy or ashen hue, which remains in some cases during the period of convalescence.

The *senses* are more or less perverted during the course of typhus fever. In addition to the pain mentioned under another head, intolerance of light, confusion of vision, with dizziness on being raised from the pillow, dullness of hearing with tinnitus aurium, and morbid sensibility of the skin over the entire surface are often very marked symptoms when there is not great stupor. There is

also in most cases great tenderness of the muscles when pressed, and it is probable that this is sometimes mistaken as evidence of gastric or intestinal disease when pressure is made on the abdomen. The muscular tenderness is said by some writers to precede that of the skin, and to diminish as the cutaneous sensibility becomes increased.

The *muscles* present other morbid symptoms beside the tenderness just mentioned. One of the earliest symptoms of typhus is loss of muscular strength. This is often so complete from the onset that the patient is compelled to take his bed; and it remains until the disease has run its course and until convalescence is pretty well advanced. The most extreme prostration of strength appears at the subsidence of the fever when the skin becomes cool and the pulse exceedingly feeble and fluttering. In addition to weakness the muscles are apt to be affected with spasmodic twitchings ("*subsultus tendinum*"). These twitchings are most apt to occur in the muscles of the forearm, but in severe cases they extend to those of the legs and face, and sometimes to all the muscles of the body.

The *cutaneous eruption* characteristic of typhus fever consists in the occurrence of *macula*, *spots* or *petechiæ* which make their appearance on the skin in a large majority of cases. The period of its appearance differs very widely in different cases, occurring in some cases as early as the second day, and in others being deferred until the thirteenth, though in a majority of cases it appears between the fourth and seventh days. In appearance these spots differ essentially from the rose-colored eruption so commonly present in typhoid fever. Their color is a dusky purple, and bears some resemblance to dark freckles; their size varies from a mere point to one-eighth of an inch in diameter; their shape and outline are very irregular; they are not at all elevated above the surface of the skin; and do not disappear under pressure after the first day or two of their existence. They appear most thickly on the breast, neck, shoulders, arms and thighs, and rarely on the face. In some cases the entire surface of the trunk and extremities is thickly covered by them. Huxham speaks of the eruption as resembling that of measles, except that the color is more dull and lurid, and described it as giving a marbled or variegated appearance to the surface, especially on the breast. The color of the eruption may be florid, and it may disappear on pressure at first, but it soon becomes dark and afterward livid when it can be but partially

effaced. It then passes into the form of true *petechiæ* which are not at all affected by pressure. The spots do not appear in successive crops but each remains after its appearance until the decline of the disease. In fatal cases the spots remain for some time after death.

Other eruptions not peculiar to typhus occasionally appear, as sudamina, miliary vesicles, and near the close of life vibices or bruise-like spots resembling those of purpura, though the last are exceedingly rare. Gangrenous sloughs sometimes occur on the hips, nates and shoulders, and are somewhat common in some epidemics, but upon the whole are not more frequent in typhus than in other forms of continued fever.

The *blood* when examined at a very early period of typhus fever has been found to be dark, and formed a large dark-colored clot, without the buffy coat. At a more advanced period it is usually "broken down and dissolved, changing rapidly into a greenish watery fluid with little coagulum, indicating a great dissolution of the animal fluids, and consequent debility."—*O'Brien*.

The different *forms* or *varieties* of typhus fever of which some authors have written, depend either upon the greater or less severity of the disease as it has just been described, or upon the occurrence of complications that modify the usual symptoms and course of the disease. Some epidemics are characterized by the remarkable malignity of the disease; such as suddenness of attack; early and rapid prostration of the nervous system; early fatal result, without much reactive effort being manifested; etc. Dr. Gordon of London insists upon two varieties of typhus fever; one of which he calls *maculated* and the other *non-maculated*. The former he says is attended by an excess and the latter by a deficiency of fibrin in the blood. Some years one or more of the usual symptoms greatly preponderate over the others, or additional phenomena are superadded to those which ordinarily accompany or follow the fever, as epistaxis; nausea and vomiting; diarrhea from mucous enteritis, or colitis; sudden occurrence of a critical evacuation, as profuse sweating followed by rapid recovery or succeeded by a relapse, etc. But nearly every typhus epidemic presents every grade of the disease from the mildest to the most grave and malignant forms. It is sometimes complicated by erysipelas of the head and face; sometimes by internal inflammation.

Convalescence from typhus fever is usually slow and is often attended by such sequelæ as desquamation, falling of the hair,

diarrhea, glandular and subcutaneous abscesses, defective memory, weakness or wandering of the intellect, etc. Relapses into the same form of disease are rare; but inflammatory and congestive attacks are by no means unfrequent, and are often attended with disastrous results.

The *duration* of the disease is very variable in different epidemics and in different cases during the same season. Death often occurs before the sixth day, most frequently between the seventh and twelfth. In cases that recover, improvement most frequently may be observed as early as the ninth or tenth day, and sometimes earlier, though many cases show no favorable signs before the fourteenth day, and yet survive the disease. The change from grave to hopeful symptoms is said to be frequently quite sudden and remarkable. It is said that sometimes, when the case appears almost hopeless, a severe struggle appears to take place in the system of the patient, which after continuing for some time, as if life and death were in close conflict, is terminated by the occurrence of profuse perspiration, by vomiting, by a free alvine discharge, or by the patient becoming calm and dropping into a quiet and refreshing sleep. This "turn of the disease" as nurses generally call it, or "*crisis*" as it is termed by medical writers, is generally followed by steady improvement, or a rapid tendency toward a fatal issue. The average duration may be stated at about *fourteen days*.

The *anatomical changes* observable in the autopsy of fatal cases of typhus fever are by no means uniform. There is no lesion in this disease bearing any comparison in constancy with that of Peyer's patches in typhoid fever. The importance of determining the difference between or identity of typhus and typhoid fevers, has led to close scrutiny by Gerhard, Jenner, Shattuck, Stewart, Reid, and many other physicians in Europe and America, during several epidemics of typhus fever, and except in a very few cases where the ante-mortem diagnosis was doubtful, the united testimony shows that in typhus there is remarkable freedom from structural changes in the small intestines, and especially in the glands of Peyer. The *mucous membrane* of the stomach and intestines is sometimes reddened and occasionally softened.

The *spleen* is not unfrequently engorged, enlarged and softened. The *liver* is occasionally softened, engorged with dark, fluid, oily blood. The *kidneys* are often darker than natural, but unchanged in other respects. In short, the abdominal viscera present no peculiar lesions that serve to distinguish typhus fever from any

other febrile disorder attended with similar embarrassment of the functions.

There is considerable constancy in the condition of the *respiratory organs*. This consists chiefly of dark-colored engorgement, non-granular consolidation, and friability of the lung-substance in the lower and posterior portions, and in some cases injection of the mucous membrane of the air-passages.

The *heart* is generally very flabby, and in many cases is so much softened as to be easily torn.

The *blood* is usually very much altered, and its appearance is said to be striking and peculiar. It is very dark—sometimes almost black—and watery, with occasional small, soft, oleaginous coagula in the right side of the heart. Sometimes the blood in the heart and large vessels resembles molasses in appearance. Dr. Jenner says: "The fluid condition of the blood generally, was observed in about equal proportions in the subjects dead from typhoid and typhus fevers; but with this exception there was a marked difference in the blood in the two diseases; it was far more profoundly diseased, i. e., it deviated far more from its healthy condition, in the cases of typhus than in those of typhoid fever."

By far the most constant lesions in fatal cases of typhus fever, if we except that of the blood, are found *within the cranium*. As death from typhus generally occurs during a state of coma we would naturally expect to find some traces of the cause of that condition on examination of the brain and its membranes. But the cerebral lesions are in general scarcely sufficient to account for the coma, unless taken in connection with the state of the lungs. The principal morbid appearances seen within the cranium are engorgement of the sinuses and large vessels with dark fluid blood, and more or less serous effusion into the subarachnoid spaces, on the upper or convex surface of the hemispheres. It is said that usually where there is much effusion there is less sanguineous engorgement. The effusion is sometimes so great as to deepen and enlarge the sulci, and compress and attenuate the convolutions. In a few cases coagula, in the form of thin films, have been found on the surface of the arachnoid, consisting of dark blood, the source of which could not be discovered. The substance of the brain is not often much altered, though the cortical layer is sometimes darker than natural, and occasionally a little softened.

The blood-vessels of the medullary substance are engorged, producing large puncta vasculosa when cut.

Causes.—The circumstances that favor the occurrence of typhus, or what may be denominated predisposing causes, may be briefly enumerated. The disease appears to be endemic in Great Britain and Ireland, and occurs not unfrequently as an epidemic, both in those islands and in most other countries. It is also evidently contagious under circumstances favorable to its production. It is however well settled that whether occurring as an endemic or epidemic, or propagated by contagion, its prevalence and spread are greatly promoted by crowding great numbers of people together, as in camps, garrisons, on board ships, in hospitals, and private dwellings. That bad ventilation, heat, dampness and filth, such as exist in the crowded, narrow streets and lanes of large cities, and especially in the cellars and other wretched places of abode of the poor, degraded and vicious, afford the disease a natural habitat at all times, and greatly promote its propagation and malignancy during the prevalence of an epidemic. Famine too is a powerful predisposing cause of typhus fever, and it is probable that deficiency in quantity and defect in quality of the food of the lowest classes in the densely-populated districts of Great Britain and Ireland, who experience a perpetual famine, has as much to do as the other circumstances already enumerated, in giving permanency to typhus fever among them. It is true however, that during the prevalence of an epidemic of the disease, it is apt to break over all its accustomed limits, invade rural and salubrious districts, enter the dwellings of the opulent, and strike down its victims in the midst of all the plenitude and blandishments of high life. Still such epidemics are more circumscribed in extent, and are more discriminating in their spread, than are epidemics of many other maladies, such as small-pox, cholera, etc., as it never remains as an endemic disease after the epidemic has passed over, except in places of the character first mentioned.

Little influence seems to be exerted in the way of predisposition by the seasons, though the rate of mortality in a given number of cases is perhaps rather greater in winter and spring than in summer and autumn.

The disease occurs in persons of all ages, though the most frequent cases are between the ages of fifteen and thirty years. Children in bad localities, or crowded together in asylums, suffer

greatly from the disease, but generally they are not so much exposed as adults. The diminution of cases after the age of thirty is probably owing partly to the fact that this fever seldom attacks the same person twice, and partly to the more regular habits and diminished exposure of persons more advanced in years. It has, however, often attacked persons advanced in years. *Sex* appears to have very little influence in predisposing to typhus fever. *Acclimation* probably fortifies the system in some measure against the specific cause of typhus, as new residents in localities where it usually prevails seem to be rather more liable to attacks than others.

Diagnosis.—The leading characteristic symptoms of typhus fever, are the great muscular weakness; the torpidity of the bowels; the biting, pungent heat of the skin; the dusky color and “drunken” aspect of the countenance; the great tendency to stupor; the dark sordes on the tongue, teeth, gums and lips; the peculiar ammoniacal odor; the petechial spots; and the extreme prostration to which it generally reduces the patient before convalescence commences.

That many of these symptoms often appear in malarial fevers which assume the continued form is very certain; they do not however set in so abruptly from the beginning, but are preceded by the characteristic phenomena of periodicity, and other circumstances that fix their character. The typhous condition not unfrequently occurs in small-pox, scarlatina, pneumonia, etc., but preceded or attended by the diagnostic peculiarities of these several affections. The typhous quality attaching itself to other diseases is a very different thing from the occurrence of specific typhus fever.

It is with typhoid or enteric fever that typhus fever is most likely to be confounded, and from which a proper distinction was not made by medical observers till within the present century. The two diseases have in fact many properties and symptoms in common, but they are each distinguished by others in which they so widely differ, as to render the hypothesis of their identity utterly untenable. Let me attempt in a condensed form to place the two diseases in contrast with each other. I will mention first the symptoms that are more prominent in typhus than in typhoid; and secondly, those more prominent in the latter than in the former.

In typhus fever the access is more frequently sudden or not preceded by lingering, premonitory symptoms; the burning, pungent

heat, and the dusky, livid redness of the skin are more common and more marked; cerebral disturbance appears earlier and is more severe, especially in the form of stupor; the bowels are much more commonly constipated; petechiæ occur much more frequently and are generally more numerous; engorgement of the cerebral blood-vessels and considerable effusion into the subarachnoid spaces are much more frequent; the blood is usually more depraved, liquid, and dark; recovery or death often occurs within the second week; and there is greater tendency to prostration of the energies of the system calling for stimulating treatment. Typhus as an endemic is principally confined to crowded, filthy, and badly ventilated localities, and is at all times manifestly contagious, which is not true of typhoid.

In typhoid fever delirium and diarrhea, or at least great irritability of the bowels is very common, and tenderness nearly always manifests itself on pressure over the ileum; epistaxis often occurs; a bright, rose colored eruption generally appears on the skin; Peyer's glands are always diseased and generally ulcerated; and tympanitis is an almost universal symptom at some period of the disease; none of which symptoms are usual, and some of which almost never occur in typhus fever. Typhoid fever extends over vast regions of country, and prevails in rural districts and among cleanly, well fed, and well clothed communities. Is often sporadic while typhus is seldom so, and is endemic in the New England States where typhus fever never occurs except during an epidemic. Typhoid fever runs a more tedious and protracted course, and recoveries from it are much more frequent after the twentieth day than from typhus. It bears active treatment better than typhus, except the use of purgatives.

Prognosis.—The mortality of typhus fever is not on the whole as great as might be expected when the character of its symptoms is considered. Yet in some localities, and especially during some epidemics, its ravages are frightful. I have examined the hospital reports of several epidemics, and find that the number of deaths as compared with the cases treated, have ranged from one death in ten cases to one in twenty-five. The mortality in proportion to the attacks is less in childhood than after puberty, and increases as old age comes on. In many epidemics the disease is very mild when occurring in children, and its severity and mortality is generally less among females than among males, though in some epidemics the reverse of this seems to have been true.

Contrary to what might have been supposed in the absence of reliable statistics, the severity and ratio of mortality of typhus, when it attacks the wealthy and educated classes of society, appear to be greater than among the poor and ignorant. Two circumstances may enter into the explanation of this fact. First, the greater excitability of the brain and nervous system generally, among educated and refined people, may render them more liable to suffer severely from a disease that spends so much of its force on the cerebro-spinal centers; and, secondly, the influence of excessive medical interference is most likely to be experienced by those who are able to sustain the expense.

Special *prognosis* must of course depend on peculiar symptoms, and surrounding influences pertaining to individual cases. Early and great prostration of strength; coma, or very profound stupor; very dark-colored or livid and abundant petechiæ; unconscious sleeplessness; hiccup; an increasing dryness of the tongue; deficiency and especially suppression of urine; great subsultus tendinum; contraction of the pupil; coolness and clamminess of the skin; excessive frequency, weakness, and irregularity of the pulse; and a sighing, difficult or irregular respiration, are reckoned among the most unfavorable symptoms.

Among the more favorable signs are mentioned a more gradual access of the disease; a well sustained heat of skin; sparseness and brightness of the eruption; retention of consciousness, and natural movements by the patient; a natural or improving state of the tongue; and a moderate force and frequency of the pulse. The occurrence of a critical struggle, followed by a more natural state of the mind, and an improvement of some of the organic functions, as those of the lungs, skin, alimentary canal and kidneys, may always afford strong hope of recovery.

The *nature* of typhus fever, if by this expression is meant the character and *modus operandi* of its specific cause, is involved in obscurity. The point of departure from health, whether in the blood or nervous system, is also still a subject of discussion between opposite parties, especially among British pathologists. These parties represent, in regard to this disease, the humoralists and solidists of an earlier period, and may be called, as suggested by Dr. Bartlett, *hæmopathists* and *neuropathists*. There is, I believe, a present preponderance of opinion on the humoral or hæmopathic side, though it is probable that in this case, as in the controversy about the color of the chameleon, there is both truth and error on

both sides. It is probable that the poison is first introduced into the blood, and that its mischievous effects are, simultaneously, injury of that fluid and embarrassment of the nervous functions. I think a rational induction from the known facts sustains this view. The early serious involvement of the animal nervous functions and mental powers must lead to the conclusion, that in typhus more than in typhoid and periodical fevers, the morbid cause acts specifically upon the cerebro-spinal centers; and the rapid deterioration of the blood seems to show a zymotic or fermentive process in that fluid. Now both of these changes occur too nearly together to warrant us in regarding one as a cause and the other as its effect. They probably therefore both are commenced under the immediate influence of the specific cause, and subsequently act and react upon each other, thus giving rise to the successive phenomena, or march of the malady. According to this view, typhus is to be regarded as being specifically, neither a blood disease nor a nervous disease, but as both combined. It is therefore in a two-fold sense a general disease—an *essential fever*.

Treatment.—In regard to the treatment of typhus fever, I can say but little from personal experience. I have treated three cases that presented strongly the leading features of typhus, and which occurred in this city under all the circumstances favorable to the production of this disease, except that they were sporadic, i. e., they did not result from contagion so far as was known, and the disease was not prevailing here as an epidemic. They certainly differed materially in the beginning, from any cases of periodic fever I have ever seen, and during their progress the distinctive features of typhoid or enteric fever were entirely wanting. They were characterized more or less by stupor and great weakness, from the onset; by a dusky skin, suffused eyes, and pungent heat; at a later period by a disagreeable fetor; and in two of the cases by the dusky, non-elevated spots.

They all recovered under the free use of quinia and prussiate of iron as the leading medicine. The bowels were moved occasionally by the use of podophyllin, leptandrin, and the extract of taraxacum in the form of pill, or of emulsion where the patient could not take a pill. If the pulse continued very frequent under the use of quinia and iron, its frequency was diminished by giving tincture of veratrum viride (Norwood's); the heat of skin was modified by warm sponge-bathing; and in the last case a warm wet sheet was applied to the entire body with manifest advantage.

After subsidence of the fever, which began in all before the end of the first week, stimulants and light food were ordered. Neither of these cases was confined to the bed two weeks, and one of them was clearly convalescent before the seventh day. On this patient no macula appeared. On the others the spots appeared simultaneously with the subsidence of the fever.

The following is the treatment of typhus fever recommended by Dr. Robert Huntry Semple, of England :

"The bowels should be opened with a drachm or two of castor-oil; the thirst should be allayed by toast-and-water; a mixture should be prescribed containing spirits of nitric ether, solution of acetate of ammonia, and camphor mixture. If there should be great delirium, much relief will be obtained by shaving the head, and a blister should be applied to the nape of the neck. As the disease advances, the pulse retaining its rapidity, most probably loses its fullness; and as soon as this is observed, beef-tea and wine should be administered in small quantities often repeated, and a mixture containing the carbonate of ammonia, should be substituted for, or added to the mixture just described. If the symptoms of sinking should increase, which is very often the case, and is indicated by a feeble, fluttering, and irregular pulse, trembling of the limbs, and muttering delirium, then brandy should be administered pretty freely in addition to the wine, and strong beef-tea should be frequently given. In addition to the carbonate of ammonia, the stronger diffusible stimulants should be prescribed—as the spiritus ammoniæ aromaticus, the spiritus ætheris compositus, and a modification of the mistura spiritus vini Gallici. It is only by a vigorous adoption of these measures that life can be sometimes saved; and indeed, it is perfectly extraordinary how, under circumstances apparently desperate, the patient has been restored by an unsparing use of these and similar stimulants.

"The use of opium in typhus fever, must not be passed over without a remark upon its great value in certain stages of this disease. In the early period, this drug would be injurious; in the latter it is useless. But where there is great restlessness and irritability, together with great weakness, the use of opium is invaluable: it quiets the patient, procures him sleep, and raises the pulse. The usual form of administration of this medicine at the London Fever Hospital, is the tincture, given in doses of ten minims, and repeated if restlessness is not relieved."—(*Braith. Retr.*, Part xxxiii, page 20.)

Dr. Graves of Dublin, Dr. McEvers of Cork, Mr. Hayward of Liverpool, and Mr. Fletcher of Manchester, report great success in the treatment of typhus as well as other continued fevers by large and repeated doses of quinia, i. e., from five to twenty grains, at periods varying from every two to every eight hours. Others—as Dr. Hughes Bennett, Dr. Christison, and Dr. Robertson, of Edinburgh—report unfavorably of the practice. (*Ibid.* p. 22.)

I think it is unquestionable that quinia is an invaluable remedy in typhus fever, but the doses prescribed by the English physicians must involve either a waste of the medicine or what is worse injury to the patient. If prescribed in such moderate quantities as to afford constant support to the nervous system it can scarcely fail to do good. Three or four grains combined with half that quantity of prussiate of iron every two or three hours, will probably accomplish all that should be expected from the remedy.

Great attention must be paid to cleanliness and ventilation in all cases, and convalescence must be managed with much care and circumspection, not so much from the probability of relapse, as from the danger of the supervention of congestion or inflammation in some of the debilitated vital organs.

LECTURE LXXXII.

NERVOUS DISEASES.

General Remarks. Apoplexy: Definition; Symptoms; Duration; Anatomy; Causes; Diagnosis; Prognosis; Treatment.

GENERAL REMARKS.

Before closing the present course, I propose to devote a few lectures to the consideration of some of the most common and important nervous disorders. In a course embracing the wide field of theory and practice, it is impossible to give any subject that extensive and minute consideration that might be convenient and interesting, if we were limited to a single disease, or to a single class or group of diseases. We have therefore to confine ourselves to the most important and common affections, and to the most prominent points connected with the subjects thus embraced. The full discussion of every point connected with the disorders legitimately included under the head of nervous affections, would occupy a full course of lectures, or would fill a volume of any convenient size. With due regard, therefore, to our time and space, I shall only be able now to take up the most common of this class of diseases, and consider those points only that are necessary to a proper appreciation of their character and treatment.

APOPLEXY.

The most correct signification of the term apoplexy is, no doubt, a sudden loss of consciousness and of voluntary motion. [This definition is very imperfect, being equally applicable to syncope and coma from various causes. To constitute apoplexy, the symptoms mentioned must be produced by sudden pressure occurring within the cranium S.]. And the most common and apparent attendants upon this state of the system are a labored and oppressed respiration, and a full, but slow, and sometimes irregular pulse. The distinction between this condition of the system and syncope, or concussion of the brain, becomes sufficiently apparent, when

the characteristics of these affections are stated, to render a correct apprehension easy and plain.

Symptoms.—As a general thing, an attack of apoplexy is not preceded by any particular symptoms by which it may be anticipated, unless we except those which follow the immediate exciting cause of the disease. It sometimes happens however, that a strong predisposition exists, and those symptoms which usually occur shortly before the sudden development of the disease, may be felt for some days prior to the actual invasion. In this way also, these symptoms may exist for a short time, and then subside without being followed by an attack. Those which usually immediately precede the full manifestation of the disease are: a sense of heaviness or dullness, in some instances mistaken for sleepiness, with the usual sense of weight or heaviness in the head; a feeling of giddiness, generally felt upon changing the position, with a ringing noise in the ears, and sometimes an imperfection in hearing or smell; the same embarrassment of function in the sight, optical illusion, or imperfect vision; a sensation of numbness, or a pricking or itching feeling in the extremities; and generally irregular or fugitive pains in the head, and sometimes in the temples and back of the head. Sometimes the mental powers exhibit a similar embarrassment, such as temporary loss of memory, or mistaking one expression for another, or a flighty, incoherent talking. There will also be a twitching of the muscles of the face, and a slight rigidity or contraction of the muscles of the limbs, with a sense of weakness or exhaustion upon slight exertion; a flushed or extremely pale countenance, changing suddenly from one extreme to the other; and a sense of fullness in, and sometimes hemorrhage from the nose, with a yawning or gaping, followed by nausea and vomiting. These last symptoms generally immediately precede the more perfect development of the disease, and the patient gradually sinks into a state of stupor more or less perfect, according as the congestion is more or less complete, until a profound coma announces the full development of the disease. As, however, the more perfect determination of the case is approaching, the incipient stupor, which follows the vomiting and yawning, is accompanied by a partial paralysis of one or both eyelids, by a difficulty in speaking, and sometimes an inability to move the limbs, until the insensibility and stupor fully determine the character of the attack. Yet it is very rare for these symptoms to precede an attack of

apoplexy for any great length of time before a full manifestation of the disease. They more commonly follow directly the exciting cause, such as a full meal, or sudden mental excitement.

Apoplexy does, however, occur without any of the symptoms enumerated as marking its approach, at least so far as we have an opportunity of determining. Patients are sometimes suddenly seized, and fall insensible to the ground, when apparently in the enjoyment of perfect health. But we can not be permitted to doubt that more or less of the symptoms mentioned must be experienced for a short period previous to such an attack. When fully developed, the condition of the patient is one of almost entire insensibility, with complete loss of consciousness. In most cases, pricking or pinching will produce a slight manifestation of uneasiness, though without any conscious efforts to avoid it. But a slight motion of some of the muscles, particularly those about the face, may be observed, such as a slight scowling or uneasiness, and sometimes there is an audible moan upon the sudden application of heat or pinching, though in some instances coma is so profound that the patient will manifest no evidences of sensibility whatever. The countenance is expressive of a deep and unawaking sleep, the patient lying with the mouth open—the respiration being slow, labored, and stertorous—often snoring, like that of many healthy persons after severe fatigue; but the face is mostly flushed and tinged, and often purple with blood. The pulse is full and generally strong, but slow, and sometimes intermittent, in some cases falling from the natural standard of seventy-five or eighty to twenty-five or thirty, or not quite so slow. The pupils, when examined, will generally be found permanently dilated, though the opposite of this is seen in some instances. Swallowing is always in this disease, more or less difficult, and in some instances impossible. The bowels are obstinately constipated, and are with the greatest difficulty acted upon by medicine, if it can be taken. The urine, though sufficient in quantity, is often retained for want of the proper power to evacuate it. Most frequently it comes away in drops as it is secreted, or after the bladder becomes distended. The extremities are inclined to be cold, though in some cases they are warm. Occasionally a sensible rigidity in the muscles of the extremities exists, or a sudden spasm of the muscles generally occurs. This rigidity or spasm is usually confined to one side of the body.

This condition of the system often continues for considerable

time, but in other cases lasts but a short time. The symptoms generally disappear as they approached, consciousness returning slowly, and an expression of surprise often marking the countenance of the patient. Thus the patient is gradually restored and recovers the usual health; though in many cases paralytic disorders, more or less extensive, follow a severe attack of the kind. The paralytic disorder is generally hemiplegic, and frequently shows itself in the early stage of the apoplectic seizure, one eye, and perhaps one side of the face, and the leg and arm on the same side, being more or less affected; sensation and motion are often both involved, though sometimes only one. The paralysis occurs in the muscles of the opposite side from that affected in the brain, though the limbs of the diseased side are sometimes troubled with spasmodic contraction of the muscles. These symptoms may gradually disappear, and the patient entirely recover; or they may linger for a long time, and never entirely subside. The intellectual faculties correspond with the physical system. As consciousness returns, and the extreme embarrassment subsides, a weakened and puerile condition of the mind will be observed. Hysterical laughing and crying will frequently alternate, and there will be an inability to express the confused ideas that are passing through the beclouded intellect. Thus the case progresses with slow and gradual improvement, until the patient is entirely restored, though in most cases of severe attacks it may be years before restoration is complete, if indeed, there is not more or less mental imbecility during the remainder of life.

In fatal attacks, patients are frequently taken off in a few hours, but they generally linger for a number of days, gradually becoming more profoundly comatose, the pulse becomes small and frequent, the extremities cold, the respiration more labored and oppressed, and finally a cold sweat bathes the surface; the lips become purple; and the patient sinks into a state of asphyxia and death.

These, then, are the ordinary symptoms both of a favorable and a fatal case of apoplexy. But they are subject, like those of other diseases, to very considerable modifications. Thus instead of a flushed and purple face, some patients appear pale and haggard, with a small and frequent pulse from the beginning, and they sink into a profound and lethargic sleep, never to rally for a moment, the vital powers yielding from the very first. In some cases, patients are seized with nausea and vomiting after a hearty meal, and immediately present unmistakeable evidences of the rapid

approach of an apoplectic attack. Or they may be taken while at work and suddenly fall, the stupor and insensibility soon following. Patients who have recovered from one attack are very liable to a second, and very rarely recover from a third.

The *anatomical characteristics* of apoplexy are perhaps as various as the symptoms of the disease during life. The morbid developments observed by different writers have given rise to a variety of speculations in regard to the essential character of the disease. In some instances the most careful examination has failed to detect any structural alteration in the brain or its membranes. But other cases present the meninges of the brain, and especially the lining membrane of the ventricles, highly injected. Effusion of serous fluid has, in other cases, been the most prominent and leading alteration discovered, both in the ventricles of the brain, and in the cavity of the arachnoid membrane. But the most common alteration discovered by post-mortem investigations is extravasation of blood, either between the membranes, or in some portion of the substance of the brain. Another set of appearances has been observed in some fatal cases of apoplexy, differing from those I have just described, to wit: softening of some portion of the substance of the brain.

The instances in which no appreciable alteration has been observed are those cases of apoplexy concomitant with other diseases, such as concussion of the brain, injury by lightning, and the like. These, therefore, do not come legitimately under the category of genuine apoplexy, which we are now considering. In most cases an injected condition of the blood-vessels of the brain is discovered, which is more frequently connected with effusion; but is also found in mild cases which prove fatal from other influences independent of effusion. Serous effusion, sometimes of a limpid appearance, is occasionally found to exist, though in most instances it is somewhat turbid, or mixed with sanguineous effusion in the ventricles of the brain, or within the arachnoid cavity. These cases of serous apoplexy are not very common, and are only found connected with other dropsical affections, or suddenly occurring from irritation reflected upon the brain.

Extravasated blood is the usual attendant of ordinary apoplectic diseases, and constitutes the true sanguineous apoplexy as generally met with. The amount of blood thus extravasated varies, however, from a few drops to quite a number of ounces. In a case resulting from a fall from a horse, without any apparent

injury to the head, the symptoms of effusion were so well marked, and increased so rapidly, as to justify the hope that relief might be afforded by trephining. This I accordingly did, and discharged through a puncture in the dura-mater more than half a pint of dark blood. The effusion may take place either into the ventricles, or the substance of the brain, or within or exterior to the arachnoid cavity. It is said the hemorrhage takes place most frequently into the substance of the brain, producing pressure and the consequent symptoms. If the effusion is not so extensive as to prove speedily fatal, coagulation takes place, the further increase of the hemorrhage is arrested by the pressure resulting from the accumulation, the fluid portion of the blood is absorbed after a time, and finally the patient either partially or entirely recovers.

Softening of the brain, producing apoplectic symptoms, generally results from chronic disease, and is not to be considered as true apoplexy.

The intimate nature or true pathology of apoplexy may be reasonably inferred from the evidences afforded by post-mortem research with more certainty, perhaps, than that of most other diseases. The most common abnormal lesion which the examination of fatal cases shows to exist in apoplexy, is sanguineous effusion into the ventricles, arachnoid cavity, and the substance of the brain. This, of necessity, must produce pressure upon the brain, in proportion to the extent of the accumulation, and a consequent obliteration of the mental faculties, and loss of voluntary motion. Though the effusion, all other things being equal, must necessarily produce its effects in proportion to its extent and amount, yet the extent of the effects will depend somewhat upon the length of time occupied in the process of accumulation. The more gradual the effusion, the greater will be the toleration, up to a certain point. Thus if the sanguineous effusion is very slow and gradual, the effects will be much less apparent than when the same amount accumulates suddenly. But when the accumulation is sufficient to press with considerable force upon the blood-vessels of the brain, the symptoms of more serious embarrassment begin to be developed. The same symptoms will be likely to follow accumulation of blood, whether it is effused, or whether it is merely accumulated in the vessels of the brain, though in the latter case the symptoms may very soon subside, and the patient rapidly recover. But when the blood has actually passed out of the vessels, and is effused either into the substance of the brain, the arachnoid cavity, or the ven-

tricles of the brain, if the patient survive the immediate shock, the system may rally, the effusion be gradually absorbed, and the patient finally recover, with such embarrassments only remaining as necessarily result from the violence done to the nervous matter of this important viscus.

Causes.—Apoplectic predisposition was at one time supposed to be as certainly indicated by the form of the neck and head, and general plethora, as a bilious temperament is believed to create a tendency to hepatic disease. Whatever truth there may be in these traditions, but little importance is attached to them of late years. A short, thick neck and flushed face were supposed to be favorable to the occurrence of apoplexy. But its occurrence in persons of long, slim necks and pale face has created something more than the suspicion that those things have but little to do in developing the disease. Age, however, has been shown to have some influence upon it. It is found that the largest number of cases occurs between the ages of fifty and eighty, and that it is rarely met with before the age of twenty. It is said too that more cases occur in males than females, owing no doubt to the greater exposure of the former. As in the case of other affections, a predisposition to apoplexy is frequently inherited. Whether this resides in the temperament common to the family character, or whether it is referable to an occult formation, is not easy to determine. The sanguine temperament is supposed to constitute a predisposition. But it can not be doubted that whatever tends to weaken the vessels of the brain and increase the irritability of that organ, may be considered as predisposing to apoplexy.

Sedentary habits are among the enumerated predisposing influences, and operate by creating a tendency to the disease. Thus numerous cases have been observed to occur shortly after indulging in a hearty meal or stimulating drinks, and any sudden mental excitement may develop an attack. The use of opium and other narcotics, it is said, has been known to be followed by apoplexy. Violent and exhausting exercise frequently produces it, especially if the individual has not been accustomed to much fatiguing effort. In short any influences productive of a determination to the head, are liable to develop the disease in systems strongly predisposed. Excessive venereal indulgence tends to weaken the nervous system, and may no doubt, be followed by apoplectic seizure.

Among the enumerated causes are, also, intense and exciting mental emotions, joy, anger, grief, terror or fear, all which have

in turn been known to induce the disease. Thus it is said apoplectic attacks are frequently observed during terrifying revolutionary struggles.

Pressure upon the vessels of the neck, by retarding the return of blood from the brain, may produce cerebral congestion, resulting in apoplexy. Tight necklaces, neckerchiefs, and similar appliances may produce this result. Exposure to the heat of the sun, violent fits of coughing and sneezing, and other influences of the kind, have also been known to bring on attacks of the disease.

Diagnosis.—It is sometimes very difficult to determine the existence of apoplexy in the absence of a correct history of the attack; on the other hand, it is not very difficult when we can learn the history of the case, the mode of its approach, and the probable exciting cause. These circumstances will also serve to show the kind of apoplexy, whether it be a mere venous congestion, a serous effusion, or the more common sanguineous exudation in the substance, between the membranes, or into the ventricles of the brain. Thus, if the case is connected with other dropsical symptoms, and the attack has been gradual in its approach, we may reasonably conclude the case is one of serous apoplexy; but if the attack has come on more suddenly, and the coma continues to increase with all the other symptoms of an apoplectic seizure, and especially with some paralytic symptoms, we should run but little risk in determining the case to be one of sanguineous apoplexy. A comatose condition of the system from intoxication will readily be distinguished by the appearance of the patient and the smell of his breath. The coma produced by narcotics, though strongly resembling apoplexy, will generally be readily distinguished by the condition of the circulating and respiratory functions. In apoplexy the respiration is stertorous and labored, without the cold and clammy sweat, purple lips, and shriveled fingers of narcotism, with a full, strong, but slow pulse; while in the coma of narcotism the pulse is more frequent, and respiration irregular, ceasing for a time and then commencing again. But occasionally an attack of genuine apoplexy is superinduced by alcoholic stimulation, when the distinction will be more obscure; but is fortunately in such a case, of little practical importance. The asphyxied coma consequent upon the poisonous effects of irrespirable gases, will generally be so apparent from the circumstances as to leave no doubt of its character, which the weak and exhausted pulse, the cool surface, and livid face will determine not to be apoplectic.

The poisonous effects of urea upon the system may result in a comatose condition, which in an abstract point of view, might be mistaken for apoplexy. But these cases are mainly connected with such other symptoms, particularly disturbance in the urinary function, as to leave little chance for mistake.

Prognosis.—Apoplexy may be always looked upon as an alarming disorder. It does not however always prove fatal, and in fact most cases finally recover from the immediate effects of an attack, though very few are completely restored or relieved from danger of a recurrence. The simple forms of nervous apoplexy are much less liable to serious consequences than those produced by effusion. Serous apoplexy is more liable to an unfavorable termination than the hemorrhagic variety. An increase of all the urgent symptoms, with a depressed rapid pulse, great irritability of the stomach, a fixed pupil, and profound coma, may always be looked upon as unfavorable; while a moderate increase in the frequency of the pulse, a more regular respiration, and a gradual improvement in the general symptoms, may be regarded as favorable indications. Second and third attacks are more likely to have an unfavorable termination than the first. The hemorrhagic forms of apoplexy must, of necessity, be very gradual in their improvement. The effusion, if ever absorbed, must be very gradually so, and though patients may recover their faculties to a certain extent, yet the mind will often show more or less embarrassment.

Treatment.—The main indications in the treatment of apoplexy are to equalize the circulation, prevent any further effusion, and gradually promote the absorption of the fluid already accumulated in the brain. Few diseases have been supposed more imperatively to require the use of the lancet than apoplexy, and yet in none are the advantages derived from it more equivocal and unsatisfactory. I do not now propose, however, to go into a discussion of that question, but will simply remark, that what I have heretofore said on the subject of blood-letting applies with more commanding force in this disease than in most others. I shall, therefore, proceed immediately to recommend the measures which are equally sanctioned by long experience and the soundest inductions.

No measure can be more immediate in equalizing the circulation, and thereby diverting from the brain, than the application of ligatures to all the extremities, as I have heretofore directed for other affections. The ligatures should be applied so as mainly to interrupt the venous circulation, and should be thus continued till other

more permanent measures can be resorted to. If from the history of the case, you have clear evidence that the stomach is loaded either with undigested food, or other substances calculated to embarrass the system, more advantage will be derived from a speedy emetic than from any other medicine that can be given. The acetic tincture of sanguinaria and lobelia is, perhaps, the most prompt and efficient, and should be given in tablespoonful doses diluted with warm water, and repeated every ten or fifteen minutes. Emetics, however, are very doubtful remedies, unless the stomach is greatly deranged with undigested accumulations, or vitiated secretions, and should not, therefore, be administered unless this state of the case clearly exists.

But the thorough action of a cathartic is, in almost any state of the case, not only proper, but highly important. It will not only remove any accumulations that may exist in the bowels, and if the right kind is administered, stimulate the secretory organs, tributary to the alvine discharges, to an elimination of morbid matter, but will also reduce the amount of the circulation, and thus divert from the brain more efficiently than can be done by any reasonable venesection. Moreover, as was abundantly shown by M. Magendie and others, it removes those elements of the blood most embarrassing to the circulation of that fluid in the small vessels, which are the most obstructed in these cases. No preparation of which I have any knowledge operates with so much efficiency and promptness as the compound powder of senna and jalap in drachm doses, with one grain of podophyllin and two grains of leptandrin. The three articles may be mixed and taken in sweetened cold water, and repeated once in four hours until the desired effects are produced. Your expectations will rarely be disappointed in the operation of this mixture, not only in fully evacuating the bowels, but in procuring copious bilious secretions. If however it should not operate as speedily as desired, it may be assisted by an injection. This, too, may be repeated once in three or four hours, till as free evacuations are produced as may be desired.

Meantime, the temples may be cupped and scarified, and revulsive applications of mustard drafts may be applied to the back of the neck, upper part of the spine, and also to the ankles and to the bottoms of the feet. The head should be slightly elevated, and every thing removed from the neck and the whole system calculated to embarrass the circulation ;—while if the head is hot,

it should be kept constantly moist and very gently fanned. If from any cause the cathartic referred to should not operate, or from any circumstances is not compatible, castor-oil and spirits of turpentine may be given in suitable doses, and assisted by injection if necessary; or croton-oil, in drop doses, made into a pill with magnesia, and coated over with fine loaf-sugar, may be given for the same purpose, and repeated like the other cathartics.

Obstinate constipation, it should not be forgotten, is generally an attendant upon apoplexy, and you may not therefore expect to procure as speedy effects from any cathartics as in most other diseases. But I can not refrain from repeating that the senna and jalap powder, with the podophyllin and leptandrin, will be found the most general in its application, and the most reliable in its effects, of any cathartic that can be used.

Having thus put into requisition the most active and reliable measures that the present state of our knowledge will enable us to use, if we do not find our patient relieved, more or less of them should be repeated as the circumstances of the case seem to justify. But the cupping and cathartics, with the revulsive applications, will be most likely to require a repetition. In addition to these measures, if the skin is hot, frequent bathing of the whole surface with whisky and broke-water, will be found to have a beneficial effect in equalizing the circulation, and may be repeated three or four times a day.

If after these measures have been carried into execution, the symptoms continue, and the patient still survives, you may reasonably conclude that you have a case of effusion that must necessarily undergo the tardy process of absorption. In this state of the system an issue may be applied to the back of the neck, while the patient is put upon the use of the decoction of apocynum, given in sufficient doses to keep the bowels freely open, which will be found one of the most efficient stimulants in the disposition of the effused fluid that can be given.

The diet during the attack should be exclusively of a simple fluid kind, and this in small quantities. And even during convalescence it should be simple and easily digested, though by no means so rigid as not to afford ample sustenance to the system, to repair the waste that is constantly going on, and supply the loss produced by the disease. Small quantities of light animal food may be allowed, but no hot bread, pastry, or other indigestible

articles. Milk, soft eggs, roasted potatoes, and such as the experience of the individual will suggest, will be proper.

The exercise should be moderate at first, but gradually increased as the patient shall be able to bear it without fatigue, using great care at first to avoid fatigue or excitement, lest a relapse should be induced. In prescribing for an apoplectic patient, it is as much your duty to direct him in the right course to prevent a recurrence as it is to remove it when called for that purpose. You should therefore warn your patients of the danger of indiscretions and irregularities in producing second attacks, and that these are far more serious than the first. While they should guard against errors and excesses in eating, drinking, and exercise, and against all improper habits, they should be instructed as to the best means of regulating the bowels. Mild aperients, moderate tonics, regular and appropriate exercise in the open air, with as perfect a system of general habits as circumstances will permit, should be prescribed. Bathing the surface every morning will be found as valuable a means of preserving health as any simple measure that can be instituted. The doctrine of repeated blood-letting for persons supposed, from their full and fleshy habits, short necks, and red faces, to be predisposed to apoplexy, is now so generally discarded, that it is probably unnecessary to be discussed. But for fear it may still linger, as traditional errors sometimes do where more correct information should exist, I will simply remark that it should never be advised, as the practice produces the very difficulty it is intended to relieve.

LECTURE LXXXIII.

NERVOUS DISEASES.—CONTINUED.

Epilepsy: Symptoms; Variations in Manifestations; Effects on General System; Anatomy; Causes; Diagnosis; Prognosis; Treatment.

EPILEPSY OR FALLING SICKNESS.

Few diseases present more frightful and alarming appearances than an attack of epilepsy. It is characterized by a sudden paroxysm of severe convulsions in all the voluntary muscles, with loss of consciousness; upon a decline of the convulsions, a profound sleep soon follows, which generally amounts to coma, and from which, after continuing for an hour or two, and sometimes longer, the patient rouses as from a gentle slumber, perfectly unconscious of what has transpired. These convulsions occur in irregular paroxysms, and leave the patient with only a slight soreness of the muscles from the violent efforts that have been made.

Symptoms.—An attack of epilepsy is frequently preceded by symptoms which warn the person who is subject to the disease, of its approach; though cases are met with in which the convulsions are the first manifestation, of which the patient has no recollection upon his recovery. When the promonitory symptoms do exist, they last only for a very short time, merely giving the patient a momentary warning of the approaching struggle, or they may last long enough for preparations to be made to protect the patient from dangerous accidents. These promonitions also vary in their character; in some cases they consist, not of any one distinct sensation, but of a universal sensation as it were, which under other circumstances, or in an individual not subject to such occurrences, would make no impression, and come to be noticed in any case only from sad experience. In some cases the patient will be hardly conscious of any change in his feelings or manifestations, while his friends will perhaps notice that he is in a moody and gloomy condition, and will hence anticipate what is to follow.

But in other cases there will be a loss of memory, and a vague and confused state of the intellect, of which patients themselves

are conscious. A sense of dullness or sleepiness, sometimes accompanied by a headache or giddiness, and a feeling of fullness, are sometimes experienced. In some instances an imperfect, dim or glimmering vision is felt previous to a paroxysm. Double vision, or a flash of lightning, or sparks, pass before the eyes, and illusory sounds or noises are heard in the ears, while there is an equally deceptive state of the other senses. Flavors and odors, strange and uncommon except in a similar condition, are recognized, and often there are shooting neuralgic pains. An examination will show, as far as can be ascertained, the existence of an actually morbid condition of these several organs.

A squinting of the eyes, an irregular or contracted state of the pupils, sneezing, and itching of the nose, will be observed, and the other senses would no doubt show a similar physical disturbance if they could be examined. In some cases, a promonitory symptom is a sensation as of a stream of cold water, or a draft of cool air passing gradually from one or both of the lower extremities, up the limbs and the center of the back to the head, and when it arrives there the patient falls into the convulsion, and this is sometimes the only occurrence that admonishes him of any tendency to an attack. In other cases this *aura epileptica*, as it is called, is displaced by sensations of a different character, occurring in a similar way, such as a stream of heated air, an itching or tingling sensation, commencing at the toes or fingers, and progressing to the head, as in the other cases.

These are some of the premonitory sensations that sometimes precede for a longer or shorter period, attacks of epileptic fits, as they are called; though as before stated it is often impossible to learn from patients that they were in any way conscious of any peculiar feelings that occurred previous to a paroxysm, as they are usually attacked without any warning, suddenly falling down wherever they may be, often into the fire, with a piteous and distressing shriek of which they are also unconscious. The convulsion gives a most distressing and startling aspect to the patient, and however accustomed to the disorder, or however conscious that the immediate attack is not one of much danger, a physician can rarely be found of nerves so firm that he is not under the necessity of collecting his disturbed and confused faculties, in order to resist the example of all around him, and be able to prescribe with a clear perception of what ought to be done. The voluntary muscles of the patient are all in an agitated state, some

contracting with great violence in a spasmodic condition, then again relaxing, and the antagonistic muscle acting with similar violence, thus distorting the system into every conceivable shape and condition; the head is drawn to one side or backward, while the limbs are violently thrown in every direction; the muscles of the face contract with irregular convulsions; the eyes stare, now open and then shut; the jaws are tightly closed, and then relaxed, when, perhaps, the tongue being thrust out of the mouth, is caught between the teeth by a sudden contraction of the jaws, and is often bitten nearly off, or severely injured. From the distortions produced by the muscular contractions, and from the determination of blood to the head, the face usually presents a swollen, purple, and most frightful appearance. In this condition patients are entirely lost to all the ordinary influences affecting any of their sensibilities. So far as we are able to judge, they might be torn to pieces or dissected, a thunder-toned trumpet might be blown in their ears, or any other equally powerful influence might be applied to their respective senses, without obtaining any response, or producing any sign of consciousness or feeling. The respiratory function, also, participates somewhat in this universal tumult of the physical man; it becomes irregular, difficult and generally imperfect, owing to the rigidity of the abdominal and other muscles, which prevents a proper expansion of the chest, and hence the purple color of the face produced by want of proper aëration of the blood.

The pulse during the paroxysm is generally small, frequent, and irregular, thus showing the universal complication in attacks of this description. Even the bowels, in some instances, participate in this general disturbance, and involuntary evacuations take place. A similar effect is produced upon the muscular powers of the bladder, and discharges of urine occur. The pressure upon the base of the brain sometimes stimulates the organs subject to its influence, producing priapism and involuntary seminal discharges. An attack of this kind sometimes continues for a few moments only, but in other cases lasts for a number of hours, producing the most complete exhaustion. In some cases it passes off as suddenly as it came on; but in others declines more gradually, the irregular muscular contractions not subsiding all at once; upon their decline, however, a full and sighing respiration takes place, and the patients become so far conscious as apparently to observe and answer questions (of which no subsequent recollection ever

remains), and then sink into a profound sleep, often presenting every appearance of coma, which is probably but an exhausted condition of the nervous system, and from which they usually rouse up after a short time as from a sound sleep, appearing slightly confused and partially lost, as though they were not fully awake. Although patients usually remember nothing that has occurred during an attack, they yet may become so accustomed to it as to be aware that they have passed through an attack.

The disease does not always take precisely this course. The violence of this convulsion may partially or entirely subside, and patients, after remaining quiet for a few minutes or longer, again become uneasy, and are very soon convulsed as before. And thus these convulsions may alternate with brief intervals of rest for a period of twenty-four hours, or more, before they entirely pass off. In these repeated and protracted cases, the system is very much exhausted, and sometimes bruised, and occasionally the tongue is lacerated and swollen. It is often a number of days before the system is restored to its usual health, and in some cases a positive coma may continue for some time and then subside; or, perhaps, terminate in apoplexy and death. In other cases, instead of waking as usual from the sleep or partial coma, patients, in consequence of the great disturbance of the nervous system and particularly of the brain, awake in a complete or partial state of insanity. But these symptoms generally subside in a short time, though in some instances they continue for a day or two.

In some cases as before stated, the attack is not fully developed, the patient feeling only the premonitory symptoms, or experiencing a very mild form of the disease. This is very apt to be the case as the attack is approaching when the cause of the disease is not so overwhelming, but is allowed to continue. In some of these cases patients will lose their consciousness for a few moments, without falling or being convulsed, and suddenly recovering will pursue the business they were engaged in. Or the system may be more disturbed, so that patients appear excited, or perhaps fall down without spasms, and thus the disease will gradually increase in violence until the true epileptic convulsion, with all its horrifying attendants, is developed. These symptoms may come on at any time, while the party is at work or at play; or they may occur at night, while he is quietly in bed, before he goes to sleep, or after he has taken a nap.

Thus it will be observed that, though a fully developed epileptic

convulsion presents nearly the same character in all cases, yet there is considerable *variation in the manifestations* of the disease, taken in all its stages. The intervals of the disease are not less variable than the progressive and fully formed stages. In some instances a single paroxysm only occurs, while in others the second attack is put off for months, and perhaps for years. But after the second attack has taken place, the period for the return of the paroxysms is not generally so long deferred, and thus they continue gradually increasing until the case is relieved, or until it terminates in a more serious disorder, producing a state of mental imbecility or permanent insanity, which are aggravated by frequent recurrence of the epileptic attacks. Some cases that appear to be connected with the menstrual function return at about the usual period of menstruation, sometimes a few days before or after, and in some cases both before and after that period. In some instances it is associated with malarial influence, recurring at stated or regular periods, either during the cold or the febrile stages of an intermittent attack.

The *influence* of these severe struggles of the *whole physical system*, and especially of the violent sufferings of the nervous system and brain, upon the condition both of the bodily and mental functions, can not of course be trivial or unimportant. Accordingly epileptic subjects can almost always be recognized by an observing eye. The very movements show embarrassment; the uncertain gait and walk, and all the outward manifestations of the physical system equally point to some overwhelming influence that has been operating upon these functions; while the mental powers are not less manifestly becoming exhausted or greatly embarrassed, tending rapidly to insanity or dementia. Thus the disease may continue on for years, sometimes to old age, without having any particular termination, or it may speedily produce an apoplectic condition and terminate in death.

The *anatomical developments* connected with epilepsy are by no means such as the violence and apparent seat of the disease would lead us to expect. It is very true that not only upon dissection, but also during life some cases of the disorder show organic disease of the brain, produced in some instances by spicula of bones, or depression of the skull from injury, and upon the removal of which the disease subsides or does not return. But aside from cases of this description, few epileptic patients ever present, so far as our present knowledge and ability to examine will enable us to

determine, any organic disease of the brain. When an epileptic is suddenly taken off during a paroxysm, the brain and its membranes will generally be found much engorged and congested; while few cases thus terminating, though long previously affected with epileptic convulsions, will show any other disorder to which the previous attacks could be referred. But there are cases of long standing, in which the mind becomes greatly involved, that exhibit unmistakable evidences of disease. Although the brain can not be supposed to be the primary seat of every case of epilepsy, I can scarcely doubt that it is indirectly concerned in every attack of the kind, and I am equally well satisfied that if we were as familiar with the minute physical qualities of the brain, both in health and disease, as we are with some other material substances, and understood their examination, we should, without doubt, find in some of its parts changes bearing the same relation to healthy structure, which we find in tuberculated lungs, or in other more common affections in organs better understood.

Causes.—We can not always trace out the cause of epileptic attacks, though a careful investigation of the predisposition will generally enable us to hit upon the apparent cause. But what condition of the system, or what changes, either accidental or otherwise, in the condition of the nervous system, are necessary to constitute a predisposition to epilepsy is difficult to determine. It may arise from the size of the vessels of the brain, or from the great nervous irritability that has been induced by peculiar circumstances, or from other influences not well understood. The statistics of epilepsy show beyond question that it is more frequent among the young than in those advanced in life, and we may, therefore, infer that age has something to do in predisposing to the disease. In this, as in many other diseases, a predisposition is no doubt in many instances transmitted from parent to child. Excessive mental labor may have the effect of weakening the nervous system, and thus act as a predisposing cause of epilepsy. Injuries to the brain are frequently followed by attacks of epilepsy, and when the injury is productive of permanent pressure or irritation, the disease is almost sure to be induced by any trivial causes that excite the brain. Venereal indulgences, and especially masturbation when it results in involuntary seminal discharges, are often followed by epileptic attacks. Functional disease of the uterus is perhaps one of the most prolific sources of epilepsy. This is most likely to occur about the period for the first appear-

ance of the catamenial evacuation, and by neglecting the appropriate treatment for the regulation of this discharge, a regular periodic return of the epileptic convulsions may be established, and the disease in this way be fixed upon the patient for all future life. The same result occasionally follows disturbance from crude ingesta, over-eating, and irritation of the stomach and bowels from worms which produce convulsions, especially in children; and if the disturbance causing the first attack is allowed to continue, the disease becomes permanent. Epilepsy is a frequent occurrence in the progress of other diseases, and may if severe, terminate the life of the patient, when but for this occurrence the case would have had a favorable issue. Organic and functional diseases of the heart and of other important organs, sometimes bring in their train attacks of epilepsy.

It will be seen therefore that epilepsy may result both from pressure and alteration of the cerebral substance, and from functional disease of the brain. But though pressure and projecting bony spicula may predispose to the disease, which may be continued by that agency, and entirely arrested upon its removal, yet in all cases some immediate exciting cause is necessary to a paroxysm of the convulsion. Whether therefore epilepsy be connected with pressure on the brain from depression of its bony casement, or projecting growths, either of a tumor or more solid structure, or whether the disease be very clearly connected with more remote disturbance of the system, very few cases are met with which are produced or kept up by actual structural disease in the substance of the brain. This view of the subject is fully sustained by anatomical investigations, and hence we may safely conclude that, though epilepsy is rightfully classed with the nervous affections, it nevertheless will be rarely found associated with organic diseases, and may therefore be considered essentially as an irritated condition of the brain reflected upon the great spinal nerves, producing a disease of function in both. Thus the irritation in the brain, from whatever cause it may originate, so far destroys the function of that organ as to deprive the individual of consciousness; while the same irritation is reflected upon the nerves of voluntary motion, producing great excitement and spasmodic movements in the muscles to which those nerves are distributed; but being deprived of that voluntary direction, which they are wont to receive from the great central organ, the involuntary movements which are excited in the muscles become violent and unique

in proportion to the amount of disturbance at first produced on the brain. The disturbance existing in the spinal center, may however be only a sympathetic relation, and not a propagative irritation; for the violence manifested in the muscles of voluntary motion does not correspond to any amount of sympathetic disturbance that might be communicated to them through the motor nerves. Besides, the excitement of involuntary movements through the ordinary and so far as we know the only channels of voluntary action, would present an unusual phenomenon.

Diagnosis.—The only diseases with which epilepsy is liable to be confounded, or which are liable to be mistaken for it, are hysteria and apoplexy. From apoplexy it is readily distinguished in all its stages, except the comatose state; in some cases, the pulse and respiration in that stage of epilepsy, after a severe convulsion, resemble an apoplectic state. But the history of the case will be sufficient to decide the character of the attack. From hysteria it will be distinguished by the frothing at the mouth and biting of the tongue in epilepsy, and from the absence of coma, the alternate crying and laughing, and the *globus hystericus*, that occur in hysteria.

Prognosis.—Recent attacks of epilepsy can, as a general thing be permanently cured; and even in its more persistent character, where we can have a clear perception of the cause of the disease, it may be relieved, and often entirely removed. But as we generally find it, comparatively few cases are ever restored. When however the affection is dependent upon pressure on the brain, and the locality of that pressure can be satisfactorily ascertained, it can be removed with the trephine, and the patient be restored to health. There is no doubt, also, that many threatened cases of epilepsy have been prevented by the timely administration of appropriate medicines to remove the cause of epileptic convulsions, when brought on by gastro-intestinal disturbance, or other disorders remote from the brain. The more frequent the recurrence of paroxysms, the more liable to become chronic, and the more difficult of removal. Epilepsy of long standing is rarely removed, but when a clear and comprehensive understanding of the cause of the disease can be obtained, and when it can be removed by the aid of means calculated to calm the nervous irritability, we should not entirely despair of its cure.

Hereditary and congenital epilepsy is rarely if ever removed, though cases are not wanting, as in many other intractable affections, where the metamorphosis attendant upon puberty has

removed the difficulty. When however a marked impression of mental embarrassment has been gradually developed, little hope can be entertained of final recovery.

Treatment.—When the *name* of a disease simply performs the office of correctly indicating some of its leading points, and is not regarded as necessarily implying a particular course of treatment, or as “furnishing a disease to prescribe at,” there is less danger of being misled or blinded as to its true cause. In the treatment of epilepsy, unless we can discover from the history of the case the relation between the cause of the disease and the disease itself, and ascertain what influence is still exercised in perpetuating the affection, it would be much better to leave the case to nature than resort to the empirical method of administering medicine without knowing what it is for. This principle applies with nearly as much force to the measures required for the *relief* of the paroxysm as for the radical treatment of the disorder. The confusion that is usually attendant upon an epileptic convulsion renders it often very difficult, if not impossible, to ascertain the probable cause, or even a correct history, of the present attack. But whatever we may discover to be the cause, it should be obviated and removed as far as possible. Sometimes the immediate exciting cause is an overloaded and engorged condition of the stomach. When this is found to be the case, a quick and easy emetic should be immediately administered. For this purpose the acetous tincture of lobelia and sanguinaria may be given nearly clear, or but little diluted, in two tablespoonful doses, or the alcoholic tincture of lobelia may be given alone in tablespoonful doses, and repeated every ten minutes, until vomiting takes place. Or if the violence of the paroxysm prevents the administration of the emetic, the same medicine may be given in the form of an injection, in double the quantity, diluted with two or three times the amount of water. Administered in this way, it will often operate as promptly and effectively as when given in the ordinary way, and in either way will rarely fail to produce immediate and satisfactory results. It is a most efficient antispasmodic, and will almost always entirely relieve the spasm as soon as it operates freely. And even though you should find yourself mistaken in supposing the cause of the disease to be accumulations in the stomach, its action will be favorable in relieving the convulsions.

When the exciting cause is found to be mental excitement, the indications then would be to relieve the irritation of the brain and

equalize the circulation. In this case, ligatures may be applied to the extremities around the arms and thighs; or to only a part of these places, if thought sufficient; cups may be applied to the temples, and a sinapism to the spine; the head should be bathed with water quite warm, and gently fanned, and an enema of asa-fœtida and lobelia may be given. When these measures are all applied they will generally succeed in relieving the spasm. Thus, guided by the ordinary principle of philosophy, you should proceed in the application of those measures best calculated to remove the immediate cause of the disease, whatever that may be.

But in any and every case, whatever other measures may be found necessary, every thing should be removed from the patient at all calculated to obstruct or embarrass the circulation: the cravat should be removed, shirt-collar opened, heavy garments taken off, under-clothes loosened, and the patient placed and kept in a position best calculated to secure the greatest comfort and freedom from injuries, and if possible with some moderately hard substance interposed between the teeth to prevent the patient from biting the tongue; but no attempt should be made to hold the patient, except so far as may be necessary to prevent injury.

In the treatment of patients for the radical cure of epilepsy, it is specially necessary that the cause of the disease should be ascertained if possible. Our inquiries, therefore, should be directed to this main point. If the tongue is red, the stomach tender on pressure, and the history of the case confirms the suspicion created by these appearances that gastric irritation has been the chief influence in keeping up the disease, then the main course should be to relieve the irritation of the stomach. In this case, no medicines will answer the purpose, unless a corresponding attention is paid to the diet of the patient, and all influences guarded against which are calculated to keep up an irritation in the stomach. Plain but nourishing food, exercise in the open air, counter-irritation by the irritating plaster over the stomach, and abstinence from every kind of stimulant, with such other attention to the general health as shall be most promotive of it, should be prescribed. If the case be connected with an impoverished condition of the blood, a more full and nutritious diet, and moderate tonics and stimulants should be given. No condition of the system is more liable to develop local irritation than an anæmic state of the blood. On the other hand, if the patient is of a full and gross habit, and exhibits a flushed face, and other symptoms of plethora, a more

spare diet and the occasional administration of a cathartic will be advantageous.

These general principles apply in most cases, and are to be observed, whatever other measures may be necessary to fulfill the indications presented in the several modifications of the disease. But the most important consideration is to find and remove the cause that is producing the disease. If that should be found upon careful inquiry to be worms, the remedies that have heretofore been recommended for that difficulty, or such of them as may be thought necessary, should be given. The fever that often accompanies dentition not unfrequently produces epileptic convulsions; determination to the brain should be guarded against, the gums should be scarified, the bowels kept open, and the diet very simple and moderate till the fever subsides. If it presents the character of cholera infantum, the measures adapted to that disorder would be proper. That form of the affection which occurs at or near the period of the catamenial evacuation will be frequently found associated with an abnormal state of the uterine functions. The menstrual discharge will either be delayed, or not sufficiently free, or not often enough, or perhaps too frequent, and if a convulsion occurs as a consequence of the nervous derangement connected with it, and repeated attacks are allowed to follow, before efficient means are taken to regulate this discharge, the disease is liable to become quite obstinate, and may ultimately prove entirely incurable. Such remedies should be used as are particularly adapted to restore this evacuation to its healthy state. For this purpose a pill after the following formula will be found a valuable remedy in all cases where the discharge is deficient, whether it be an entire suppression, or only a diminution.

℞ Sulph. of iron, gum guaiacum, gum myrrh, aloes, equal parts.

Alcoholic ext. macrotys, q. s. to form into a mass.

Divide into pills of three grs. each; two, three or four to be taken at night.

This with such other medicines as are calculated to restore the regular monthly evacuation, should be resorted to and persevered in till the object is accomplished. Meantime, for the purpose of promoting a more healthy state of the system, and subduing the irritation that has been reflected upon the brain, I have been much accustomed to direct the application of an issue to the back of the neck,

to be kept discharging for a number of months; while the cold sponge-bath used every morning before dressing, and followed by friction to secure a healthy reaction, will serve not only to produce a more natural and proper condition of the skin and capillary circulation, but will also be found to have a beneficial influence on the health, and subdue the nervous irritation existing in the case. Such attention should also be given to diet, and other habits pertaining to the general health, as the particular circumstances of the individual case may require.

The cases brought on by masturbation will generally be found so far advanced as to manifest decided evidences of mental disturbance often bordering upon dementia, and will therefore present but little hope of any permanent advantage from treatment. In the first place, the habit of masturbation has generally become so fixed in such cases, and the involuntary emissions growing out of it so much of a disease—probably seated in the base of the brain—that it is very difficult to break up the series of morbid actions which have been developed, even when the mind has not become involved to any great extent. But when the disease has progressed so far that the mind is bordering on insanity and gradually becoming more seriously involved, it will be almost useless to venture any encouragement in such cases.

Epilepsy dependent on bony excrescences, or depression of the skull from injury, can only be cured by removing the portion of the bone involved, by the operation of trephining. Many instances are known of epileptic convulsions having existed for years, which have been permanently relieved by a surgical operation. The same course must be pursued when a tumor presses upon a nerve near the brain, and the irritation being reflected to the brain, develops an epileptic attack. Various interesting and curious cases of epilepsy are recorded, which were produced by remote irritation of some part of the system reflected upon the brain, and which were relieved by surgical operations.

In the treatment of all these cases, beside the measures that have a direct reference to the removal of the cause of the disease, it is always important to administer medicines calculated to allay nervous irritation, and give tone to the general system. For these purposes many articles of the *materia medica* have, from time to time, been recommended and used. The nitrate of silver, sulphate of copper, and some preparations of zinc, have all been recommended with various degrees of confidence. But the effects

which I have witnessed from them have not impressed me with the conviction that they can be used with much expectation of permanent benefit. But we do possess a remedy that can be recommended as fulfilling these indications with more certainty than any heretofore used for this purpose. I refer to Macroton. This should be given in from one to two grain doses twice a day, commencing with small doses, and gradually increasing until its specific action is discovered, when it may be slightly diminished, if its effects are too decided. Its specific effect is a slight pain in the head, which however is transient, and unless it becomes severe the medicine should be continued in the ordinary dose. When the case presents any decided periodical attachment, you will rarely be disappointed in seeking advantage from the use of anti-periodics, as in the case of other diseases where these symptoms are present. The quinia and iron are, beyond all question, the most reliable remedies that have heretofore been used. In these cases it will be necessary to use them in quite as large doses as in other affections, and to persevere with them longer. They should be commenced a few days previous to the expected paroxysm, continued for a short time, and then discontinued; but resumed before the next period, and given as before. They should be administered for a number of months. The valerianate of quinia has some advantages over the sulphate, and it may therefore be used in conjunction with the iron in preference.

Along with this general restorative course, which is almost universally called for in the treatment of epilepsy, it may be necessary occasionally to administer for a short period some of the more direct sedatives. As a general rule, the most appropriate will be either hyoscyamus or belladonna. The tendency of opium to produce inactivity in the glandular system, and the liver in particular, together with its constipating effect upon the bowels, renders its administration injudicious when it can be avoided.

Few diseases have been the subject of empirical treatment to a greater extent than epilepsy, and there is none, perhaps, for which there are so many "infallible cures and specifics," if we are to believe the old nurses as well as other members of community. To enumerate the remedies that have come to light from these sources would be to recount a variety of ridiculous humbugs. At the same time it must be confessed that, with all the investigation which has been made into the morbid developments and symp-

tomatic manifestations of the disease, very little is known to the profession in regard to any remedies by which the disease can be cured in most of the severe cases which we are called to see. Nevertheless by pursuing the course I have endeavored to point out, of first ascertaining the cause of the disease, and then attempting the removal of that cause, we may hope in the beginning of many, if not most of the cases, to effect a cure.

Indigo given at first in scruple doses, and afterward increased to a drachm or more, has been recommended in very strong terms by some who have used it. Spirits of turpentine is also said to have proved successful. The root of peony officinalis has been said to be a valuable remedy. The *artemisia vulgaris*, or mugwort, had for some time quite a reputation in the treatment of these cases, and has been recently revived. *Strychnia* has also been used, and it is said with some advantage.

Whatever course of treatment is pursued, the safety and well-being of the patient would dictate great care and attention in guarding against accidents. Patients should rarely be left alone, and should be particularly warned against being in any position that would jeopard their lives in the event of a convulsion.

[Dr. Robert Hunt, of England, has treated several cases of epilepsy with success, some of which were of long standing. His view of the etiology of the disease is, that the disturbance of the nervous system is due to the retention of the constituents of urea—cyanogen and ammonia—uncombined in the blood; the mischief being referable mainly to the cyanogen. He says, "It is probable that when cyanogen or a cyanide has accumulated to a certain extent, it will act on the brain and spinal cord as it does in the form of hydrocyanic acid, which, according to Dr. Prout, when given in large doses, but not sufficient to cause instant death, occasions convulsions." As alkalies have the power of decomposing urea, he thinks it probable that undue alkalinity of the blood may prevent its formation, and he has found in urine of epileptic patients, so far as examined, very little urea. This view of the cause of epilepsy led him to employ the nitro-muriatic for its removal.

His patients took a nitro-muriatic acid bath every evening, remaining in it about twenty minutes. In one case the sponge-bath was used. They also took 20 minims of the dilute nitro-muriatic acid in a glass of water twice a day before meals, and made a moder-

ate use of subacid fruits with their diet, and also of lemon juice, vinegar or cider. Gentle aperients were occasionally employed to keep the bowels regular.

He relates five cases, three of which were cured, one much improved but still under treatment, and one a lad 11 years old, in whom the treatment was so successful that his parents sent him to school. He bore his studies well for a few weeks, and then began to feel confused; soon took a severe fit and died.

I have not had an opportunity of testing this remedy since it attracted my attention, but intend to do so at the first opportunity.

Oxide of silver and oxide of zinc have both been favorably mentioned as remedies for epilepsy, in reports from London hospitals. Dr. Barlow of Guys hospital directs a sirup of iodide of zinc. S.]

LECTURE LXXXIV.

NERVOUS DISEASES—CONTINUED.

Delirium Tremens: Evils of Intemperance generally; Legislation required; Cause of Delirium Tremens; Symptoms and Stages; Complications; Diagnosis; Prognosis; Anatomy; Treatment; Opium and other Common Remedies; Author's Practice; Quotation from Dr. Gerhard.

DELIRIUM TREMENS, OR MANIA A POTU.

In republican countries like ours it is difficult, if not impossible, to impose restraints which, in some respects, are necessary, to the well-being of individuals. If it is the duty and object of the State to provide, by all just and feasible means, for the well-being of its members, and the good order of society, it must be obvious to every reflecting and disinterested mind that the deplorable evils flowing from the unrestrained traffic in spirituous liquors loudly call for stringent and radical legislation. And yet it can not be denied that no system has yet been devised which goes to the root of the evil, or which has fully realized the expectations of even its friends, in repressing this vice. The unequalled facilities afforded in this country for obtaining alcoholic beverages, together with the exhilarating influence which they have upon the system, combine to render their use very common among all classes of the community. The occasional use readily grows into a fixed habit, which becomes an inexorable and tyrannical demand, before which the mightiest intellects and loftiest moral feelings are hopelessly borne down and depraved, and by which the noblest individuals are converted into malignant fiends, or transformed into irresponsible maniacs. It is this condition of the system that I now propose briefly to consider.

Although alcoholic stimulants are the remote *cause* of the disease in question, yet the immediate exciting cause is generally the want of the accustomed stimulation upon the brain and nervous system, arising from the sudden suspension of the use of spirits after a long-continued and excessive indulgence. This, however, is not invariably the case; for individuals are sometimes attacked with the disease while in the midst of a protracted course of dissipation. But

in all the cases of this character which have come under my observation, the indulgence has been beyond the point of toleration in the stomach, and the stimulant has been rejected for a short time previous to the attack; or the amount was so greatly diminished that the relative influence upon the brain was similar to entire suspension after a long but less excessive indulgence. We may, therefore, justly conclude that the disease is one of positive debility in the cerebral functions produced by over-stimulation. The authorities make a distinction between the two modifications thus occurring. But, aside from the facts I have just mentioned, the distinction is an imaginary one, as no more difference can be observed in the character of the two cases, occurring as I have stated, than we frequently find in different individuals in whom the disease followed upon an entire suspension. In addition, and as bearing conclusively upon the point, the two modifications referred to require essentially the same course of treatment for their relief.

Delirium tremens generally commences in from one to four days after the suspension of the excessive stimulation. The amount of stimulation necessary to produce an attack differs greatly in different constitutions. In some it comes on after a severe debauch, while in others it appears only after the suspension of the regular habit of drinking large quantities. It occurs, also, in different degrees, and with various modifications. But with whatever violence, or with whatever complications it may appear, its main and characteristic features will be readily distinguished from every thing else. Cases occurring after a long but less excessive use of alcoholic stimulants come on more gradually, and are less severe than those that follow a protracted debauch.

Symptoms and Stages.—The division into stages made by most modern authors is of no more practical utility than a similar division in any other disease, where the symptoms are progressive, and vary at different periods. In some instances, however it may afford the slight advantage of following the disease more clearly than we should be likely to do by pursuing the course of describing it as a whole. The division referred to is into three stages. But they so often mingle as to frequently destroy the distinctions, and render it almost impossible to point out the precise line of demarkation. Besides, the symptoms usually described as belonging to the first stage can not, with any propriety, be considered a feature of delirium tremens, since they follow almost all cases of

protracted intoxication, and may recur a hundred times in the same individual, without any nearer approach to the genuine disease. This stage, the authorities tell us, is characterized by nervous agitation and mental depression, called the *horrors*. These symptoms are accompanied by considerable muscular weakness and trembling, especially in the hands, and sometimes extending to other muscles, particularly to those of the face. It is, in short, a state of great exhaustion of the system, with a feeble and frequent pulse, a cool skin, and a tendency on the part of the patient to a quiet and moody state of mind. The hands are unsteady, and the tongue trembles when protruded, which can be done only with difficulty.

The *second* stage commences with aggravation of the symptoms of the first, after a day or two of abstinence from the long-accustomed stimulation. A more excited state of the mind and a talkative disposition will be observed. The muscular tremors increase, the appetite is entirely lost, and patients find themselves unable to sleep. At this stage the individual begins to have illusory thoughts, and to see objects with a double appearance, or often imagines the existence of forms, things, and scenes which he knows all the time are figments of a disordered brain. But it will plainly be perceived that this state materially influences the individual, who, though describing the hallucination, and averring a consciousness of its entire illusory character, requires a constant effort to retain the conviction that it is not real. Thus the case progresses with an increase of the deceptive feelings and mental frauds, until the fancies become in the belief of the patient, almost fixed realities, though even yet he may not be so entirely lost to a perception of surrounding circumstances but that, by the special direction of a friend in whom he has entire confidence, the illusion may still be perceived and acknowledged. This consciousness is transitory, however, and the same illusory objects are again observed with an increased conviction that they are physically present. While this state of mind continues patients can generally be diverted for a short time, and may converse with entire propriety on subjects of interest, or the ordinary occurrences of the time. These lucid intervals soon become more transient, and the patient will recur more frequently to the hallucination of his diseased mind as if they were realities, until they become the sole subjects of his thoughts and conversation, and strange fixtures, guns, serpents, witches, fiends, fiery dragons, and other fearful things

assume a real and substantial existence in his imagination. Then the disease may be said to be fully formed. But there is no uniform manifestation of these mental fancies. While some individuals occupy their entire time in brushing off, in a most disturbed and violent manner, bugs, insects and reptiles, first upon one arm, or one side, and then upon the other, and shrink from their approach with horror and disgust, or, as they stealthily creep upon the person, dislodge them with a vigorous blow; others have fearful contests with witches or fiends, and manifest the most anxious and haggard expression of countenance that can be conceived. Then again, the poor and distressed subject of this morbid and hallucinated condition becomes the object of an unrelenting and wicked persecution, and is hunted for his life by those who should be his friends, but whose animosity, excited by an unintentional injury, will be satiated only with dire revenge. He sees them skulking behind his bureau, or under his bed, armed with weapons of death, and he the intended victim of their hatred and exasperation. With profound earnestness, and almost tragical pathos, the big drops of sweat standing upon his forehead and tears of deepest sorrow rolling down his cheeks, the most humble acknowledgements are offered, and the most piteous appeals for a reconciliation and for the sparing of his life, are addressed to the generosity of his fancied enemies.

During these scenes the individual will mostly retain his recollection of friends and acquaintances, though in these states of extreme excitement it will generally be difficult to divert his attention to other occurrences. Thus the case will go on, if not relieved, until the strength is exhausted, and from mere bodily inability the patient is forced to take his bed. His hallucination continuing, he gradually sinks, at length becomes comatose, and dies in a state of apoplectic stupor; or is at once thrown into an epileptic convulsion, and finally sinks exhausted. While the patient is affected with delirium tremens sleep is impossible, and hence the main indication is to procure quiet sleep, or more properly to quiet the nervous irritation and excitement upon which the insomnia depends. This explanation of the phenomena of the disease, is the only rational one that can well be given. Procuring sleep with opium, if indeed this can be done, does not cure the disorder, nor calm the troubled mind of the suffering patient. But when the irritation is removed by appropriate stimulation sleep is

at once restored, and frequently continues uninterrupted for a number of hours.

The *third* stage is characterized by an aggravation of the illusory fancies. The phantasms of the brain often become strangely mingled and exceedingly incoherent; or perhaps the patient sinks down into a low and unconscious muttering, with a highly excited and agitated state of the whole muscular system, and presents the appearance of exhaustion and delirium frequently attendant upon low forms of fever; the skin is cool, sometimes cold and moistened with a cold sweat; the pupils are contracted or greatly dilated, and fixed or insensible to light.

That modification of delirium tremens which comes on in the midst of a debauch, presents, in addition to the characteristic illusory fancies of the genuine disease, a more bloated appearance, a flushed face, red eyes, a more distinct vascular determination to the brain, and a duller state of the sensibilities, often amounting to stupor not far removed from coma or apoplexy.

It is not unusual for well-marked cases of delirium tremens to present *complications* with various organic affections of the different organs of the body, and even the brain itself becomes involved in other forms of disease in connection with it, presenting characteristic symptoms of such disorder intimately blended with the symptoms of genuine *mania a potu*. Thus effusion on the brain, resulting from the long-continued stimulation of its membranes, may exist in connection with general dropsical affections, and by suddenly withholding the stimulant the patient becomes affected with delirium tremens, while there are also unmistakable evidences of dropsy of the brain. The excessive use of stimulants is very likely to produce a predisposition to disease in the liver, lungs, and other viscera, and to render the whole organism susceptible to morbid influences. Thus affections of those organs and diseases of a more general character are developed more frequently than in other cases; and when thus excited further stimulation often becomes inconvenient, is therefore generally suspended, and in this way delirium tremens becomes complicated with diseases of other organs and of the general system.

Diagnosis.—The previous habits of the patient could not fail to suggest to the physician the probable character of the disease. But aside from that, the symptoms of delirium tremens are distinct and unequivocal. The peculiar illusions and the muscular

tremors are never combined in any other disease, and therefore may be said to point with unerring certainty to this affection. Some other symptoms occurring at the same time give strength to the conclusion, but are not of themselves conclusive, as most of them occur in other disorders. While therefore we may be called to see almost any other affection, if we find these characteristic symptoms, we may reasonably conclude that the main disorder is more or less modified by the disease in question.

Prognosis.—Delirium tremens ought not to prove fatal. Long neglect under certain circumstances may place the most harmless disease beyond the reach of medication. So if a case of this affection is neglected or badly treated until a collapse and coma have taken place, we need not expect recovery. Delirium tremens may also be associated with some other disorder having an unfavorable tendency, and thus the two combined may prove fatal. But in almost any complication that can be readily imagined, not in itself too serious for relief, we should expect to have a favorable issue. Mild cases will generally recover without any treatment, though they may be slow and tedious.

The *anatomical* showings of delirium tremens coincide very remarkably with the functional character of the disease. The slight changes which have been observed in connection with the disease do not harmonize at all with the doctrine of inflammatory action or any other organic disorder of the brain. A slight increase in the natural moisture of the brain—in some instances being sufficient to constitute decided effusion—is sometimes found, though not so uniformly as to render this symptom pathognomonic, but rather an accidental concomitant, resulting from post-mortem change, or from the protracted dissolution usual in such cases. But it is often one of the effusions that the general dropsical tendency, often following long continued habits of dissipation, has produced. I am, therefore, strongly inclined to place delirium tremens among the functional diseases of the nervous system.

Treatment.—It is not a little remarkable that learned authors should, upon purely theoretical grounds, condemn a course of treatment which is abundantly confirmed by practical experience. Yet some of our most modern and popular works repudiate the stimulating treatment of delirium tremens, when it is altogether probable that the authors have never fairly tested it, and of course have never instituted a comparison between the results of that course, and the course which depends mainly upon opium and

sedatives, or in fact upon any course that has ever heretofore been recommended. Experience has so fully determined this question, and wherever an opportunity has been afforded for a fair comparison, the statistics present so striking a contrast between the comparative results of the stimulating and every other course of treatment, that it is difficult to account for the difference of opinion between writers, except upon the ground that prejudice or preconceived opinion has prevented a thorough trial of the stimulating measures. Almost from the beginning of my practice, I was induced to treat delirium tremens with stimulants and tonics, while in many instances, in the surrounding community, other members of the profession pursued a different course of medication, always with great delay, and frequently with fatal results. I had therefore an opportunity to observe the comparative results of the two modes of treating this affection. While the effects of stimulation are so sensible and apparent as to leave no doubt in the mind of any careful and candid observer that they are curative, it is exceedingly doubtful whether the other course is in the least beneficial, if it is not decidedly injurious.

Opium, or some one of its preparations, stands the most prominent among the remedies which have been sanctioned by authors generally, and indeed has been considered by many as indispensable. But, though cases treated upon this system do mainly recover, it can not be denied that many prove fatal. The statistics show that from six to ten per cent prove fatal under this course. Whether the hygienic measures alone, without any other treatment, would show as great a mortality as this, may well be questioned. If in some cases, or even in many of those that recover, the effects are beneficial, it must be conceded that it is sometimes hazardous, and I am fully satisfied is occasionally fatal. The object of administering opium it is said, is to procure sleep—so necessary in these cases—and it should therefore be given until the indication is fulfilled. In some instances, it may answer the purpose in a proper time, but cases are frequently found where large quantities have to be administered before the object is accomplished, and it is not unfrequent that its effects are cumulative before they become manifest, so that patients are narcotized by the time the desired soporific influence is produced. Besides, its influence upon the disease is not at any time so apparent as to leave no doubt of its salutary operation, while in many instances the increase of the urgent symptoms becomes so apparent during its exhibition, as to be con-

clusive in this respect; and after a comparison of the two measures patients often become conscious of the difference, and object to the opium for fear of the results. It is therefore in view of all these considerations that I have not been in the habit of administering opium in any case of this disease.

In regard to the treatment of this disorder with stimulants a moral question is raised and urged with some force. I should be willing to recognize its validity and be governed by its precepts, if experience had not abundantly taught me that the whole argument is based upon mere theory, and has no practical foundation. However singular and contradictory it may seem, after the full effects of the stimulation are realized, and the nervous system is calmed down into a quiet condition, and after the restorative influence of a refreshing sleep has annihilated all the previous vagaries of the imagination, though patients recollect such fancies, and seem often distressed with their supposed reality, until they are informed of their error, they yet have no remembrance of having taken liquor during the paroxysm, and have no more demand for it at that time than though they had never taken it, and not so much as follows the effects of opium. It is unquestionably true that most confirmed inebriates ultimately perish from intemperance, and that individuals restored from the severest attacks of delirium tremens finally return to their old haunts and habits, and thus disappoint the expectations of their friends, and the most hopeful anticipations of their family connections. But I will hazard the opinion that not less do so of those who are treated with other measures, than of those who are treated with stimulants. Of all the cases of delirium tremens thus treated that have come under my observation, I have never yet found one that did not disavow any demand for liquor for some time after getting up, and in whom the determination was not apparently strong and sincere to avoid entirely his old habits. And many a noble heart has warmed up with the prospect of retrieving a fallen and blemished character, and realizing the fruit of a firm resolve, and has demonstrated to the world the possession of a nobility of nature and strength of purpose superior to the seductive enticements by which the generous and social impulses of the soul are so often ensnared and betrayed.

Persons ordinarily suspend the use of stimulants for one of three reasons;—the first is a determination to do so in view of the consequences to themselves and family; secondly, because they are forced to, either from their situation, or by those having control

over them; and thirdly, because the stomach will no longer retain it. In either case, a most powerful demand is encountered; in some cases a severe struggle has to be endured, which frequently becomes overwhelming and intolerable, so that patients often utter the most beseeching appeals, or resort to the most wary and sagacious stratagems to gratify the ruling passion. Not so with those who have had an attack of delirium tremens. Such persons may go for a long time without feeling the demand. But the struggle, though postponed, comes at length for them also, when the ordeal must be passed; if the individual has the sagacity to see the consequences, or is in company with friends to assist him through the fiery trial, he may come out safe; while the less fortunate and the less resolute yields to the demand, and "the dog returns to his vomit," and he is again a drunkard. This feeling or demand sometimes follows at intervals for years; and perhaps after persons have resisted the temptation time and again, and manfully overcome the demand, in an unguarded moment they take a little for a diarrhea, or upon some other plausible and apparently reasonable excuse, when they instantly become irresponsible monomaniacs, and plunge once more into the boisterous career of folly and dissipation. Thus I can affirm with the utmost confidence that the treatment of delirium tremens with stimulants, is no more likely to perpetuate the habit of dissipation than any other mode, and I, therefore, have no hesitation in giving that treatment the full influence of the most unqualified recommendation.

My uniform practice, in all cases of delirium tremens, has been to administer stimulants to the extent of calming the characteristic symptoms, and thereby inducing sleep. In order to secure the best effects with entire safety to the patient, I generally begin with moderate doses and gradually increase till the effects are produced. I begin with tablespoonful doses of *best brandy*, in twice the quantity of hot water, with a little sugar, and repeat every hour, gradually increasing the amount of brandy to half a gill at a time. The quantity taken is not so material, but the effects upon the system must be carefully watched, and as soon as the patient gets to sleep he should be left undisturbed and kept asleep if possible for a number of hours. But if he should not continue to sleep after the usual time for another dose it should be repeated; or what I think is better, after evidences of the quieting influence of the spirits upon the system begin to be manifested in a more calm and less talkative mood, and, perhaps, in a less horrified

exhibition of the vagaries of the mind, or by a change of the scene to one of a more moderate character, a teaspoonful of ether, or Hoffman's anodyne, may be substituted for the brandy at every returning hour. This course seems to have the effect of diffusing the spirits upon the brain, and hastening the soothing influences of sleep. I have in several instances given a pint of the best pale brandy, and two ounces of Hoffman's anodyne, in ten or twelve hours, with the most complete and desirable results. Not the slightest evidence of intoxication, either directly or indirectly, has been witnessed, but a calm and refreshing sleep for six, eight, or ten hours, has always been induced, followed by the return of a perfectly quiet condition of all the natural faculties, and a demand for some light food. The patient will remember nothing which actually occurred during the paroxysm, but will put many anxious inquiries concerning the transactions which he supposes have taken place, of the illusory character of which he will be easily satisfied.

Perhaps I may be allowed to describe in general terms, by way of illustration, a case which not long since came under my own observation. It was that of a lawyer of commanding talents, generous impulses, and a noble heart, who after years of excessive dissipation, suddenly resolved to release himself from the power of the debasing habit. The attack was as usual gradual in its approach, and was fully recognized by himself, as well as by others. His illusions were at first known by him to be such, and were frequently referred to and described as their character changed, with the remark that he knew them to be imaginary. Although considerable time had elapsed since the attack began to approach he still kept up, and the hope of passing through the attack without breaking his resolve not to touch or taste the hated stimulants, prevented any treatment except with some mild tonics. But the attack gradually progressed, until the illusions began to assume in his mind the reality of life, so that it was difficult to persuade him to the contrary; and at length a scene of an entirely new character arose before his imagination, which no arguments or illustrations could convince him was not real. Three individuals had conspired to take his life for an indignity offered to one of them while engaged in his profession. These persons were skulking about his room, first in one part, and then in another, now behind the bureau, then in the clothes-press, armed with pistols and bowie knives, and intent to pounce upon him in an unguarded moment

and take his life. It was a lamentable and impressive scene. The devoted victim of these revengeful and malicious enemies stood before them in his night dress, with a loose cloak over his shoulders, under which were secreted the fire-tongs, his only weapon of defense. Thus he stood during the whole night, behind a large chair, which he seemed to think in part protected his body, and watched the movements and skulkings of his inveterate foes with the most eareworn, haggard, and wild expression of countenance; expostulating and pleading in most eloquent and pathetic strains for a reconciliation; now offering concessions equal to any reasonable demands, then agreeing to pay in money double the amount of any injury sustained; occasionally calling them by name and beseeching an interview in open light, and then again pleading with a third party, who he said was cognizant of the facts, to intercede and prevent the murder. But all was to no purpose; the plot thickened; the shadows upon the wall were his enemies coming out from their hiding-places, and ready to pounce upon him; he became more restless and excited, grasped his weapon with greater force, and placed himself in an attitude of defense. Fearful that he might be goaded to violence, I used every possible effort to convince him of his error, then vainly endeavored to persuade him to surrender the tongs to me that I might defend him, and at last was compelled to wrest them from him for my own personal safety.

I shall never forget the earnest and beseeching expostulations which he addressed to me, with tears coursing down his cheeks, not to deprive him of his last and only weapon for the protection of his life. But at length he yielded the point, and the scene thereupon changed. His system began to feel the effects of a pint of pale brandy and an ounce or more of Hoffman's anodyne, which I had given him during the last ten hours. At this time the morning was near, and he was evidently becoming more composed, but imagined himself a mediator in a dueling affair, and was exercising all his skill to prevent an interview. The large chair was one of the parties to whom he was addressing himself, and I succeeded in diverting him for a moment by pointing out and moving the chair, so that he recognized and felt the ridiculousness of his grotesque mistake. Finally I prevailed upon him to take to his bed, and as the influence of the treatment was rapidly increasing, he soon dropped to sleep, in which state he continued, with momentary interruptions only, for ten hours. When he awoke he was

perfectly himself, calm and composed. But very soon I observed a gloom spreading over his countenance, and he inquired, in a most solemn and anxious tone, if I had heard of those fellows up street? "What fellows?" I asked, as if not understanding him. "Those fellows who have been watching to kill me," he replied. I told him it was an illusion, and that there was nothing of it. His countenance brightened up, and with a smile, he remarked, "Well, there was a duel, was there not?" But upon being assured that that too was a mere dream of the fancy, he laughed outright and remarked, "We are funny creatures!" He had no recollection of the previous night, nor of any thing connected with it, except the two scenes before described, nor was he aware that he had taken a drop of stimulant, and had no demand for it for some time thereafter. He is now a perfectly sober man, an ornament to his profession, and a valuable member of society.

I have thus related the details of a well marked, but unfortunately not uncommon case, and have given you the entire treatment with its effects in that case, which were similiar to those I have pursued and witnessed in every such case. When I am satisfied that I have a case of delirium tremens, I disregard any complications, so far as the treatment of that disorder is concerned, and pursue the course I have pointed out. I do not restrict the amount of spirits to be taken, but the effect is what I look after, though the stimulant should always be commenced in moderate quantities, and gradually increased as it may be necessary to produce the effect, and I have never yet administered it in a case where it did not answer the desired end. Out of more than fifty cases in my private practice, I have never yet lost one; not counting hundreds of those cases described in the books as of the first stage.

Although, as at present advised, I should thus treat any and every case of delirium tremens, whatever its complications, at least so long as the symptoms of that disorder should continue, it is yet no unimportant matter to recognize the complications which may be mixed up with this disease. These should be treated with reference to the character of each complication that may occur, though not to the exclusion of the treatment appropriate to delirium tremens. But you should watch with great care the progress of the case, and when the characteristic symptoms of the mania a potu are relieved, the specific treatment for it should be suspended, and the case should then be managed upon the principles applica-

ble to the other disorders. If the stomach should be found greatly deranged, whether accompanied by vomiting of vitiated secretions or not, a gentle emetic will be found to afford great relief to the symptoms attendant upon that derangement, and will aid in calming the nervous excitement. An infusion of eupatorium perfoliatum taken freely, will in these cases generally be sufficient. But if it should not act with the necessary efficiency, lobelia may be added. When there are evidences that inflammatory action in the membranes of the brain is complicated with the characteristic symptoms of delirium tremens, moderate purgatives and other revulsive measures should be efficiently applied. Cupping the temples and the head back of the ears, sinapisms to the feet, ankles, and back of the neck, and bathing the head with warm water and gently fanning it to aid evaporation, should all be perseveringly made use of, and repeated in part or in full, as may be necessary. If effusion on the brain should be the complication, the apocynum, in sufficient doses to keep up a free action of the bowels, and also to stimulate the kidneys, together with revulsive measures, cupping, etc., are the most reliable remedies, though digitalis, iodide of potassium, squills, and other diuretic agents, may be found of service in such cases. If a morbid action in the lungs is the complication in the case, such of those measures as have heretofore been recommended for lung affections should be employed, as the extent of the disease and symptoms present may seem to require. But in these cases I have found from experience that to premise with a gentle emetic, and follow with quinia and iron, as in malarial affections, together with the brandy, is the most efficient course that can be pursued.

But as I have before stated, whatever the complication, the characteristic illusions and other peculiar symptoms of delirium tremens will be readily recognized, and I have never witnessed any but favorable effects from the stimulating treatment in any of these cases in which I have known this course to be pursued. When the complication is one of a periodical character, as I have found it in a number of cases, the quinia and iron have not only arrested the periodical attachment, but have invariably seemed to quiet the nervous irritability, and in one or two cases were all that was required.

As confirming the general doctrine in most of its details, which I have thus endeavored to teach, I can not refrain from reading to

you a portion of a note by Dr. Gerhard, of Philadelphia, to the chapter on the subject of delirium tremens, in the "*Library of Practical Medicine*."

"The plan of treatment, by opiates and confinement, is the one that was almost universally practiced in Philadelphia several years ago, with variable results. In my own practice I have gradually diminished the quantity of opium which I formerly gave, and for some time past have not used it at all. Instead of it, I have relied upon the stimulant treatment which is followed in some parts of New England, and from time to time has been much resorted to in the Philadelphia hospital; that is, the use of stimulating remedies, particularly alcoholic liquors. These articles I first employed in conjunction with opium, or prescribed them without opiates, in two different conditions; firstly, in the slighter cases, or those of incipient delirium tremens; or secondly, in the severe cases, where opium had been exhibited but was followed by distress of mind and stupor. But at present I use them singly. This treatment has diminished the mortality of the disease, and rendered it almost always curable. The change which I have adopted in the hygienic rules, has also contributed very decidedly to this result. Instead of confining the patients, I let them walk about and enjoy the company of others as much as they choose; merely taking care that some one should be near them to prevent accidents. I was led to this change by observing that the hallucinations which attend the disorder were more distressing when the patients were in a state of confinement than when they were allowed to walk about as much as they were disposed. As I have already remarked, they are capable of controlling these hallucinations, until the intellect is entirely powerless; and they can do so the more easily when they are surrounded by objects which may serve to engage their attention. Confinement always irritates them, and increases their ravings, so that the third stage, in which the intellect is completely destroyed, is apt to be brought on more speedily. I have very often tested this by a simple experiment; a man who was confined to his bed by a straight jacket, or something of the kind, I have frequently directed to be dressed, have soothed him by conversation, and after requiring a promise that he would conduct himself with propriety, I have very seldom found reason to be dissatisfied with the result. On the contrary, the disease would almost invariably become milder, and the necessity of confinement cease. It is true that confinement is often necessary at night, from the

impossibility of always providing a sufficient number of attendants. I therefore (with the exception just stated) allow the patient to have full liberty, the only restraint being the presence of the keeper: sometimes I also direct them to be set at work, which serves still further to distract their attention.

"The proportioned mortality under the two plans of treatment which I have detailed, is represented in the following summary, comprising the number of cases treated among the men for the space of five and one half years—that is, from the 20th of May, 1834, to the 13th of November, 1839. The whole number of cases admitted for delirium tremens, or intemperance, which was expected to terminate in delirium tremens, was 1241. Of these there were 1198 whites, and only 43 men of color. Of the whole number, 708 were decided cases of delirium tremens, 60 were slight cases, and 430 cases of mere intemperance. Of the latter some terminated in decided delirium tremens, and others proved fatal from diseases (such as pneumonia) contracted during the fit of drunkenness for which they had been sent to the lunatic asylum. Of the whole number, 121 cases proved fatal; that is, a fraction less than one in ten.

"In the first year—May, 1834, to May, 1835—the number of admissions was 141: of these, 18 died; that is, rather more than one in eight. In the second year the number of cases was 211, the deaths 24, or a little more than one in nine. The third year in 301 cases there were 47 deaths, a much larger proportion than in preceding years, one in $6\frac{1}{2}$, but depending upon an accidental cause; that is, the occurrence of an epidemic of typhus, which attacked many of the debauched subjects of intemperance; some of them were sent to the lunatic asylum as laboring merely under the effects of intemperance, and could not be afterward removed to the proper ward.

"In the fourth year, beginning May, 1836, of 207 cases 19 only proved fatal, that is about one in eleven. This was a decided amelioration, and coincides precisely with the epoch at which the change of practice was introduced.

"In the fifth year the mortality went on diminishing, and was less than one in twenty-six; or of 237 cases, only 9 were fatal; and among these cases the mortality was certainly greatest in those which were treated chiefly according to the method formerly pursued at the hospital.

"Finally in the months, ending November, 1839, the mortality

was only one in 33 $\frac{1}{3}$, that is four cases out of 135; and of these four one entered moribund, and was not therefore treated in the hospital; another had inflicted upon himself several fractures and other injuries, by leaping from a third story window, in a fit of delirium tremens, previously to his entrance. The others, it is believed, were also complicated cases.

"The preceding summary of the results of the treatment is extracted from a lecture which I delivered at the Philadelphia Hospital, in December, 1839. The results of the treatment for the last year, up to the present time (October, 1840), have been still more satisfactory. The number of cases of the sequelæ of intoxication, and of delirium tremens in the three stages, admitted into the men's ward of the Philadelphia Hospital, from October 12, 1839, to October 12, 1840, is 223. Of these 61 were classed under the head of intoxication or its immediate sequelæ, some of them passing into delirium tremens. If we exclude the whole of these 61 cases, there remain 162 cases of decided delirium tremens; of these, 87 were admitted in the first stage, 73 in the second, and 2 in the third: 160 cases recovered, and one remained convalescent, who is since well (October 16). One only proved fatal; this patient was admitted in the third stage of the disease, and died in a few hours after his entrance; he had been treated with opium, and a box of pills which he was taking was sent to the hospital with him. Of course, this apparent exception confirms the general conclusion, that the disease terminates favorably in every instance, when treated according to the method recommended.

"The proof must, therefore, be conclusive if all the circumstances surrounding the patient remain the same. These have remained precisely as they formerly were, with the exception of the difference in the management and treatment of the patients. The superintendent is the same, the resident physicians, in whose immediate charge the patients remain, are of the same average education and experience, and the other circumstances connected with the disease remain the same. The inference is, therefore, rigorously deduced, that the former method of treatment yielded an average mortality, which varied but little in different years; while the treatment now pursued, is followed by a mortality which may be regarded as a mere cypher. The single fatal case which has occurred among the list of 162 patients admitted, depending on other causes, and the progressive decline of the proportionate mortality keeping pace with the change of the treatment. If,

therefore, evidence of this nature be rejected, or if the facts, which were not observed by one person alone, but by a large number, if a practice which was not carried out by a single resident physician, but by a succession of a large number, be rejected as wanting due confirmation, it is very clear, that the common rules of observation, and the conclusions which, under the ordinary circumstances, would be regarded as beyond cavil, must fail when applied to medicine. This, of course, involves a contradiction, that few would be willing to admit—at least, to avow.

“The treatment substituted for the former practice was conducted according to the following general plan:—If a patient entered in a state of intoxication, whether he was laboring under the early symptoms of delirium tremens or not, an emetic was always prescribed;—the best for this purpose is either a simple diluent drink, such as chamomile tea, or warm water, or a dose of ipecacuanha. After the operation of the emetic, the patient was generally tranquil for a time, and sometimes fell asleep. On his awaking the symptoms of delirium tremens presented themselves, if his debauch had been protracted. If it had lasted only for a few days, the disturbance of the nervous system was limited to a slight agitation, or tremors; many such cases occur and terminate in a day or two. If the disease pass into regular delirium tremens the treatment does not differ from that pursued in those cases, in which the disease is developed previously to the admission of the patient.

“The object is then to remove the disorder of the nervous system which follows the excessive use of ardent spirits, by a milder excitement which may gradually terminate in recovery. For this purpose the best remedy is alcohol, that is, some form of distilled spirits; in our hospital that employed is the cheaper kind of brandy. Of this, an ounce may be given every three or four hours, if the case be a slight one; if the tremors are more severe, or if the disease has advanced to the second stage, two ounces should be given every four hours, or one ounce in every two hours. It is very rarely necessary to exceed this quantity in cases which are brought under treatment in the first, or early in the second stage. There are some cases which require for a short time larger doses; these are those in which the disease is either of itself more severe, or in which the patient has been in the habit of using enormous quantities of alcoholic stimulus. It is then often necessary to administer the brandy in doses of two ounces every

two hours, but these doses are rarely required for more than a single day. In a few cases, where the depression is extreme, it becomes necessary to increase the dose even beyond this amount. In two instances at least, the quantity was not less than two ounces every hour for three or four doses; these were, however, extreme cases, of a class which I have ever known to recover under ordinary modes of treatment.

"The rationale of this practice is evident enough; the excessive stimulation to which these patients have been long subjected is not only followed by a subsequent depression, but is attended with an extreme disorder of the nervous system, which constitutes the essential character of the disease. The stimulating practice relieves this instability for a time by substituting its own peculiar action, and when administered in these doses, which are never sufficient to intoxicate, the subsequent depression may be completely avoided. Of course, no practitioner who feels a proper regard for his patient, or for his own character, would allow the patient or his friends to increase the quantity of alcoholic stimulants to such a degree as to run the slightest risk of producing these intoxicating effects. The quantity must vary according to the susceptibility of the patient; if this has been nearly destroyed by excesses, the quantity of alcohol which is necessary to produce a given effect must of course be greater than in those cases in which it is still but little impaired. The dose should always be as small as possible, for if the quantity necessary to tranquillize the patient be exceeded, it acts as an irritant, and produces injurious consequences.

"I am perfectly aware that the alcoholic stimulants are not absolutely necessary for the majority of cases of delirium tremens; a variety of methods will cure the disease, or it will in the greater number of cases get well of itself, like all diseases which have a self-limited duration. I wish merely to state what is incontestably proved by the documents, that the stimulant practice offers a successful result which may be looked for with a certainty which is almost absolute, and that this method of treatment has the advantage of being applicable to the worst cases; in the milder ones the only question is, whether it unites the advantages of curing the patient 'safely, quickly and agreeably'; of this no one who has witnessed the horrible sufferings of those who labor under delirium tremens, and their speedy alleviation by this treatment can entertain a doubt.

"The difficulty which will arise in the minds of many, is of a different kind: many physicians will hesitate on moral considerations, from a dread of either seeming to give countenance to the habit of spirit-drinking, or from a dislike to administer a poison which has itself caused the disease. This for a long time caused me to use this mode of treatment with extreme reluctance, and to restrict its employment to those cases in which it seemed indispensably necessary, but the results were so incontestable, and the diminution of mortality so evident, that I could not avoid adopting a method which has hitherto insured the safety of the patient, under circumstances in which it would otherwise have been placed in extreme hazard.

"If the probability of a recurrence of the disease were increased, it would still be a matter of doubt whether a physician should hesitate; but there is no reason for believing that there is an increased danger of a relapse. At least the examination of the register of the hospital proves that this is not the case. If the patient returns to his former associates before the disease is completely passed, that is before the restlessness is removed, a relapse into habits of intemperance is almost immediate; but if all remains of the disease be completely removed, the remembrance of the attack and its accompanying horrors, will in general preserve the patient, for a time from a renewal of his vicious habits. A complete abandonment of them is unfortunately not common, and is scarcely practicable without an entire abstinence from intoxicating drinks."

[The editor had intended to abridge the foregoing quotation in order to obtain room for other matter in another part of the work; but upon re-examination it seems so important as an authoritative support to Prof. Jones' management of delirium tremens, that he has determined to let it stand.

One would suppose that testimony of such character and from such a source must have attracted the attention, and modified the practice of all well-read physicians. Such, however appears not to have been the case, for the opium treatment is still relied on by many who sustain a respectable position in the profession. It is but little more than a year since a patient treated for delirium tremens in one of the public institutions of this city, died with all the symptoms of narcotism. He took the following every hour, with perhaps one or two interruptions, until he fell into a profound sleep with stertorous breathing, gradually sank as under narcotic influence, and died before he woke:

- R. Tincture of opium, f3j.
Extract of cannabis Indica, gr. j.
Sulphuric ether, f3j.
Whisky, f3j.

The whisky and ether would probably have been sufficient to procure sleep, had they been administered alone; but when the narcotic influence of the opium and cannabis were added, the sleep as should have been apprehended, "knew no waking."

The writer has used the following with highly satisfactory results:

- R. Brandy or whisky, Oss.
Tinct. prickly ash berries, f3j. M.
S. Give a fluid-ounce every two hours.

The kind of liquor was ordered to which the patient had been accustomed.

If calmness does not soon follow, the following may be given, alternating with the former prescription:

- R. Chloroform, f3ij.
Olive oil, f3j. M.
S. Shake well and give a teaspoonful every two hours. S.]

LECTURE LXXXV.

NERVOUS DISEASES—CONTINUED.

Rheumatism: Preliminary Remarks; Nature of Rheumatism; Divisions; Acute, Description, Anatomy; Subacute Rheumatism; Difference pointed out; Chronic Rheumatism; Description; Nervous Rheumatism; Description; Causes of Rheumatism in General; Diagnosis; Prognosis; Treatment of Different Forms in Order.

RHEUMATISM.

The discussion of rheumatism in connection with nervous disorders will appear, to those who have been in the habit of considering it as an inflammatory disease of the fibrous structures, unnatural and out of place. But when the whole phenomena of the disease are carefully considered, and its character examined upon philosophical principles, it will be found so entirely incompatible with what is now recognized as the true doctrine of inflammatory disorders, and especially as applied to the structures referred to, that I apprehend the objection to the above arrangement will no longer be made. Inflammatory affections are not subject to the sudden and peculiar migratory movements that characterize rheumatic disorders, but when once located continue to the end of the attack. Rheumatism, on the contrary, may appear one day in one extremity, as the hand or foot, with great heat, redness, swelling, and severe pain; and perhaps the next day it will be found occupying the opposite extremity with equal violence, while it is nearly or quite gone from the point first attacked; and thus it goes on frequently changing, sometimes in a day, from one remote point of the system to another. In other instances, the disease presents an equally fluctuating course, changing about without the least apparent cause, from one side to the other, with great severity of suffering to the patient, but without any appearance of local inflammation in any of the parts. A third form is frequently met with, in which the pain and tenderness are more fixed and permanent, but without the characteristic evidences of inflammation. These facts, I take it, are altogether sufficient to settle its non-

inflammatory character, and therefore unsettle the doctrines that necessarily pertain to that view of the subject.

Nature.—The question may then be asked, if not inflammatory, what is the nature of rheumatic affections? And doubtless it is much easier asked than answered. In the first place, its changeable character shows that it partakes very greatly of the nature of nervous disorders, and the intense suffering it produces indicates the same thing, while it also distinguishes it from ordinary inflammatory disorders. Nor are these the only evidences of its close connection with purely acute nervous disease, if indeed it is not entirely such. For in almost every case of what has been called inflammatory rheumatism, a great degree of tenderness in the roots of the spinal nerves will readily be discovered by moderate pressure on each of the vertebræ, at the origin of the nerves distributed to the part affected. Another evidence is, that intense suffering may be experienced without any appearances of inflammation in any part. In addition, some instances of pure nervous affections are shown to be such from the distinctly periodical return of the suffering, accompanied by the ordinary evidences of local inflammation; but when the nervous disorder is removed, the inflammatory symptoms disappear without any further treatment.

From the great diversity of character and symptoms which rheumatic affections present, modern writers have considered the disease under four separate heads, to wit: the acute, subacute, chronic, and nervous. The division is a very natural one, and not only facilitates a clear understanding of the character of the disease, but has an important practical bearing, as some of the modifications require a corresponding difference in the mode of treatment.

ACUTE RHEUMATISM.—This form of disease sometimes comes on quite suddenly, after an exposure to wet and cold. But more frequently it is preceded by a chill, followed by fever. A stiffness is soon felt in the muscles, which rapidly increases until it presents the true character of *inflammatory rheumatism*. But more commonly still, it commences with a soreness and stiffness of the muscles, particularly in a portion of the extremities, though sometimes it is felt nearly equally over the whole system, but soon centers the more distinct appearance in one of the limbs, and sometimes in a single joint. It may thus continue for a few hours, or during the whole time, presenting every appearance of active inflammation, with great heat, redness, and swelling, with the most intense grind-

ing or gnawing pain; and in the space of a few hours, all the active symptoms of the local disease may disappear at the point of its first invasion, and show themselves in a remote part of an opposite limb. In some instances it affects the joints of the fingers, particularly those next to the hands; but more commonly falls upon the larger joints, the wrists, elbows, or shoulders, or the ankles, knees, or hips. The swelling and soreness do not immediately subside upon the appearance of the disorder at another point, but the pain is generally gone, and with it the symptoms disappear as rapidly as the nature of the vital principle will admit of. In some instances, after having left a part, and appeared with great severity at another place, it returns to the original point, and thus goes through its course. In some cases it is confined to a single limb or joint; in others it affects nearly the whole system simultaneously, or starting at a single point, travels from place to place until the whole becomes affected. The force of the irritation in some cases seems to be spent on the ligaments and tendons of a limb; while in others the synovial membrane is more especially the part affected. But in others, again, the fibers of the muscles, or the cellular structure connecting them, is more particularly involved. Wherever the acute form of this disease may be located, inability to move without great distress and suffering will be observed.

Fever and general derangement are universal accompaniments of this form of the disease. Sometimes, though not always, the fever is preceded by a chill. The skin is hot and dry, the tongue is generally coated, though sometimes it is red or dry. The pulse is generally quite rapid, and sometimes irregular, varying from ninety to a hundred and twenty. The bowels are mostly constipated, and the urine is mainly high-colored and diminished in quantity, and will generally be found, during the most inflammatory stage, depositing a sediment, which never occurs during the active stage of ordinary inflammatory disease. This form of rheumatism is most common during early spring, or late in the fall, after the frosts have mainly put a stop to vegetation; also during damp, cool weather, though always with a prevalence of malarial influences to a sufficient extent to give the fever a distinctly periodical character. The fever increases toward evening, or in the afternoon, becoming more severe until midnight, with a decided aggravation of the sufferings of the patient.

Besides the characteristics of this affection already referred to,

rheumatism is frequently found changing from the external parts of the system, and falling with great severity upon some internal organ. Thus, in some instances, it is suddenly translated from a limb or a joint to the heart or the lungs, producing the most alarming and urgent symptoms, and sometimes proving suddenly fatal. Other internal viscera are frequently the seat of translated rheumatic irritation, and in all such cases the disease thus produced is more violent and dangerous than when excited by other causes. Disease of the brain, when thus produced, is generally very sudden and violent, and unless promptly and efficiently treated is liable to result in fatal consequences.

The *anatomical characters* of acute rheumatism are not such as to throw much light on its pathology. Although the blood, when drawn during life, exhibits a buffy coat upon cooling, yet the occurrence of this appearance in conditions of the system precluding the idea of inflammatory action, unless it be of a general character, may be supposed to present very equivocal evidence in reference to that question. But even supposing that appearance did imply an inflammatory action, I still think the doctrine of primary nervous disorder, consisting of a high grade of irritation, if not positive inflammation, in the roots of the spinal nerves, furnishes a sufficient cause for the inflammatory symptoms that are found accompanying the disease. The same phenomena are presented in many cases of neuralgic affections, in which the original nervous character of the disease is not doubted. The effects of these local symptoms are more or less observable in the tissues involved in the reflected disease, and present no appearances different from the effects observed in other local inflammatory action. When the inflammation is located in the synovial membrane an increase in the synovial fluid will exist. Various degrees of thickening and adhesions will be found according as the inflammatory symptoms are more or less intense.

SUBACUTE RHEUMATISM.—The subacute form differs mainly from the acute in that its symptoms are less violent, which, as in other diseases, is probably referable to the constitutions of the persons affected, and also to the character of the cause producing the attack. In this form the symptoms do not as suddenly appear, and the local effects are not as severe as in the acute. Though some swelling of the joints and parts affected will always be observed, yet it will not present so inflamed an appearance as in the more inflammatory variety, there being less redness and heat, as

well as less tenderness and soreness upon handling. It is quite liable, like the acute form, to sudden changes, and is more disposed to involve the internal viscera, and thus develop, in systems predisposed to any local disorder, an attack of severe inflammation. There is scarcely any part or organ of the body that may not be thus affected, according as the predisposition is more strongly marked. The lungs, the brain, the heart, and particularly the bowels, are all subject to metastasis of subacute rheumatic disorder. So also the different muscles and tissues of the more external parts are all liable to be involved. The muscular and fibrous structures of the eyes, the muscles of the face, neck, and back, and also the abdominal and lumbar muscles are all occasionally involved. The great nervous chords, as they emerge from the spinal canal to be distributed to the extremities, show a peculiar tendency to diseased action in rheumatic subjects.

Both in the acute and subacute forms of rheumatic affections, instances will rarely be found in which pressure upon the vertebrae will not discover a sensible tenderness, and in many cases, patients will complain of an exquisite soreness upon the slightest pressure.

CHRONIC RHEUMATISM.—Chronic rheumatism may be said rarely if ever to occur as an original affection, but results entirely from protracted cases of the acute and subacute forms. In the true state of the case it can scarcely be considered a rheumatic affection, but rather a local chronic inflammation, in which the primary disease has mainly if not entirely disappeared. It may exist in all those structures liable to be involved in the two first named varieties, but is most frequently found in the large joint, and is often accompanied by adhesions causing considerable stiffness. But little pain is experienced in these cases, unless the parts are moved, or the joints are attempted to be fixed or straightened. With it few or no constitutional symptoms exist. In some cases, where the muscles of a limb are affected, they shrink and become greatly diminished in size, nutrition of the parts being mainly suspended, owing to their not being used. The adhesions that are frequently found in chronic rheumatism, from which stiffness of the joints results, often produce thickening of the articulating ligaments and bursæ of the joints, and thus induce considerable deformity of the parts, in some cases to an extent sufficient to destroy the use of the joint and produce ankylosis. As its name imports, chronic rheumatism is tedious and protracted in its course, and always very difficult to cure.

NERVOUS RHEUMATISM.—Nervous rheumatism, if considered as a mere spinal irritation, reflected upon the parts involved, is without doubt, a very common affection. But I do not wish to be understood as thus considering it. In this connection I shall restrict the term to rheumatic affections of a nervous character, without any local inflammation, general fever, or other symptoms of constitutional derangement. I should not consider this term applicable to any disease except neuralgic affections, if we did not occasionally meet with cases following the subacute form of rheumatism, or preceding it with symptoms of neuralgia. I allude to it, at this time, more particularly to explain the division stated at the commencement of this lecture. This modification of the disease might, I think, be omitted with great propriety, and the cases classed in this connection would be fairly comprehended among those diseases dependent upon spinal irritation, making the distinction of acute rheumatism to depend upon inflammatory action in the nervous radials, and that of neuralgia upon irritation.

Causes.—It might have been more in accordance with the usual course to have considered the causes of the different modifications of rheumatic affections separately; but the causes of the acute and subacute must be considered essentially the same, and the chronic modification as resulting from the others; hence, a separate discussion of each would necessarily have involved a repetition, and I have, therefore, thought best to speak of them all at once. The most common exciting cause of rheumatism is exposure to cold, most frequently occurring during damp and changeable weather. It is not the ordinary exposure to extremes of cold that may be considered peculiarly the causes of rheumatism; but exposure to damp places, and particularly when the system is overheated; or the long-continued and partial application of cold. Thus attacks of rheumatism frequently follow exposures to a draft of cool, moist air, or from lying upon the damp ground, and sleeping in newly-plastered and damp houses. It should be remarked however, that these causes do not invariably produce rheumatism, even when they operate to the fullest extent. It therefore follows that some other circumstances are necessary to its occurrence. But upon this subject no very well settled views are entertained. There can be little doubt that some peculiarity of the system is necessary to its occurrence. This condition has been called a rheumatic diathesis, a phrase which does not in the least relieve the question of its obscurity, or explain the condition of the sys-

tem so constituted. It would seem to be somewhat connected with temperament and perhaps also with age, as persons of certain temperaments and particular ages are peculiarly subject to attacks of the kind. Thus, persons of sanguino-nervous temperaments, of large muscular proportions, and prominent joints, are more subject to rheumatic attacks than others of a different temperament, and may be said to have a rheumatic diathesis; while persons greatly advanced in life, and young children, are rarely affected with rheumatism. These principles apply with equal force and truth both to the acute and subacute forms, the one being a more severe attack than the other, resulting from a more intense exposure, and a greater susceptibility to the disease. This rheumatic tendency, like many other affections, is clearly transmitted from parents to children, and is therefore considered hereditary. In this however, as in nearly every other disorder having the character of hereditary predisposition, it does not consist in the transmission of elementary principles, circulating in the fluids of the body, nor in a special taint of the system; but in that great ruling force that molds the physical conformation of the child after the pattern of its parents, and thus establishes to a certain extent in posterity, the constitutional susceptibilities of their progenitors. These susceptibilities however, are often greatly modified by the union of different constitutions in the offspring; in some cases they become so changed as to be nearly lost, while in others they are presented in a more aggravated form.

Diagnosis.—The only disease with which rheumatic affections are liable to be confounded is gout. The location of gout exclusively in the joints of the feet, and its almost invariable occurrence in individuals accustomed to high living and excessive drinking, are sufficient to distinguish the disorders. It is only with the acute or inflammatory form of rheumatism that gout is liable to be confounded. The migratory character of rheumatism, and the more stationary habits of gout,—except the metastasis that occurs to the internal organs—will also serve to distinguish the two affections.

Prognosis.—In the absence of some unexpected sudden translation of the disease to a vital organ, by which patients are immediately involved in other and more serious complications, rheumatic affections of any form almost invariably recover. Different cases present great diversity in their grades of violence, and the severity of suffering, as well as the persistent character of the attack. But

with all the differences that are found to exist, and even with the complications connected with them, rheumatic affections are almost always cured. Some, however, pass off imperfectly, and chronic disease follows, which is sometimes of a most deplorable character, little less to be coveted than death itself.

Treatment.—The treatment of the different modifications of rheumatism is more diverse than the symptoms presented by each. I shall, therefore, consider the measures applicable to the different modifications separately, and in the order before named.

The views I have endeavored to inculcate in reference to the nature of acute rheumatism, have been more particularly suggested by experience in its treatment. For the last twenty years, no case of the acute affection has occurred in my practice, in which I was not able to detect a sensible tenderness in those portions of the spinal column, from which the nerves proceed to be distributed to the parts involved in the disease, and in which the remedies, applied with reference to the local origin of the disease, did not manifest the most beneficial influence upon the reflected symptoms. My uniform practice has been to apply cups to the spine, and scarify the parts found to be tender, in severe cases; or if the case did not present an urgency sufficient to justify or require so active a measure, I have sometimes relied upon the application of a mustard poultice till it produced a sensible redness upon the surface, and repeated the sinapism at least once a day and sometimes twice. But in the severest cases cups should not be dispensed with, even if scarification is not deemed best. I have in hundreds of cases witnessed immediate relief of suffering in the reflected disease, and as soon as time could effect it an entire subsidence of the local inflammation. When the local symptoms change to other remote parts, they should be followed correspondingly by the same appliances to the spine. Though these measures afford the most unmistakable evidences of their beneficial effects upon the disease, by relieving the pain, and indirectly subduing the local and reflected irritation or inflammation that accompanies the case, I have not been in the habit of relying upon them to eradicate the disorder. The general derangement, which is found associated with the local symptoms, requires the use of other measures having reference to the complications that may be found to exist. I have accordingly found, in some cases, such unmistakable evidences of derangement of the stomach as to call for an emetic. In such cases, it never

fails to afford sensible relief to the attendant symptoms, and also prepares the stomach for the action of other remedies that are indicated. Any of the emetics heretofore recommended will answer in these cases.

The next measure of importance, having reference to the general derangement, as well as the local inflammation, is a cathartic. But in most cases there will be less urgency for the administration of purgatives than for the other measures, and as the remedy that I have most frequently given in the acute form of the affection will be found to act with sufficient energy, within a reasonable time, I have mostly deferred the administration of other cathartics, and relied upon colchicum. But when this is found not to be the case, and there are evidences that more speedy effects are desirable, the compound powder of senna and jalap with cream of tartar, may be given. As already intimated, most cases of acute rheumatism met with in this country present, in many respects, the phenomena of intermittent fever, with the morning remissions and evening exacerbations. In these cases, I usually prescribe the wine of colchicum with quinia, in the following combination :

R. Vin. colchi., f3ij.

Quin. sulph., grs. xxv. M.

Of this half a teaspoonful may be given every two hours, until it operates with sufficient freedom upon the bowels, so as to keep up a free discharge every day, or oftener if found necessary; or if it is found to operate with too much violence upon the bowels before the full influence of the medicine is experienced on the other symptoms of the disease, one grain of the sulphate of morphia may be added to the prescription. In many cases it will answer a still better purpose to administer at night before bedtime ten grains of the compound powder of ipecacuanha and opium, or three grains of equal parts of opium and ipecacuanha, and repeat in two hours, if necessary. This course will rarely fail to produce a moderate diaphoresis, as well as allay any general nervous excitement that usually accompanies the disease, and thereby secure a comfortable night's sleep — always desirable in any disease. The cups should be applied freely, and repeated if necessary. Local applications to the parts affected will be found of little value, either in relieving the suffering, or arresting the inflammation in the parts affected. Yet when considerable heat and redness existed, I have frequently applied a towel wet in moderately cold

water, changed once in four or five hours, with decided advantage; hop fomentations will answer a similar purpose.

After the more inflammatory symptoms have been relieved with the measures I have suggested, or such of them as may be found necessary,—or for the treatment of the *subacute* form of the affection, which this stage of the acute form resembles, if the disease does not entirely subside, I would prescribe the following pill, recommended to me by a former pupil (Dr. Geo. Ewing), which he had used for a number of years with the most decided curative effects, with permanent counter-irritating action on the spine, and which I have seen followed by entire relief.

R. Inspissated juice of pokeberries (phytolac. dec.) dried to an extract in the sun,
White pine pitch (white turpentine), āā xx. grs.
Macrotin, x grs.

Mix, and form into twenty pills, one of which may be given every four hours until the symptoms are relieved. In these subacute cases, after the application of the cups as in the acute form, I have generally applied the irritating plaster to the spine, and allowed it to remain until a copious discharge followed, with the best effects. At the same time the use of the pills referred to, or the wine of colchicum and quinia, with the diaphoretic powder, should be continued until all the symptoms of the disease have entirely disappeared. Few cases will prove so severe or persistent as not to yield to the measures I have recommended, or be likely to degenerate into the chronic form.

I repeat, then, for the purpose of placing the course I recommend in a plain, simple and condensed view before you, that cups, with other revulsive and counter-irritating appliances to the spine over the points found involved, the administration of an emetic in the beginning, if found necessary, and the free use of the wine of colchicum and quinia, or the more prompt action of other cathartics first, if the condition of the bowels seem to render it necessary, and then the use of colchicum and quinia, together with a moderate course of diaphoretics, and the application of cold wet towels to the parts affected, when swelling, heat and redness exist, constitute the most reliable and efficient course I have seen pursued in the treatment of the acute or inflammatory variety of this affection. The pill of phytolacca, macrotin, and turpentine, with a more permanent revulsive course to the spine, together with some simple

local treatment, such as the camphorated or volatile liniment, are the main reliance in the subacute form.

Other remedies might be mentioned by way of variety, for these forms of rheumatic disorders, some of which are no doubt valuable. Among these the spirit vapor-bath may be instanced as producing very favorable and often no doubt beneficial influences upon the course of the disease. This is given by placing the patient in an open-bottomed chair, and surrounding him with a blanket, closely fitted round the neck and coming down to the floor outside of the chair, leaving the head and face exposed. A basin partly filled with whisky should be placed under the chair and lighted. As it burns the watery portions are evaporated, which with the warmth created will almost invariably produce a copious sweat. This may be continued for half an hour, when the patient should be thoroughly wiped off, rubbed with a dry flannel or crash towel and put to bed. This, when preceded by the emetic and cupping, will rarely fail to relieve the present sufferings of the patient, and will be likely to have a favorable influence on the future course of the disease. Or if it is not thought best to use this "whisky sweat," the following course may be pursued, especially when the attack has been caused by sudden exposure to cold. After premising with the emetic and cupping, administer the compound tincture of Virginia snakeroot in warm balm or pennyroyal tea, in sufficient doses to produce a profuse sweat, and keep up the perspiration, with the aid of warm bricks, for a number of hours. With this course, when the attack was not sensibly modified by malarial influences, I have in many instances seen severe rheumatic affections immediately arrested, and patients restored after a very few days' confinement.

The *chronic* form of the affection will require a different course of treatment. In this modification the reflected disease found in the extremities has become the paramount one, and the original irritation seated in the nervous radicals at or near the spinal marrow may have disappeared, when little benefit can result from any local appliances to that part. The state of the general system, and the local disorder wherever found, will furnish the main indications for treatment. The whole nervous system will be found more or less involved in these cases, partly growing out of the nature of the original disorder, and partly produced by the contaminated state of the general system from the want of the usual exercise and the consequent retention of stale matter in the system.

The first step in the *treatment* of chronic rheumatism is to ascertain whether the digestive and assimilative functions are performed with the regularity of health; and if not, to apply those remedies best calculated to restore them. If the tongue is coated, a mild emetic should first be administered. It will frequently be necessary to repeat the emetic a number of times during the progress of the cure. The functions of the liver are always important to healthy digestion, and attention should be paid to ascertain that a healthy state of this secretion is secured. For this purpose, the taraxacum pill may be given for a few nights in the beginning; but after the stomach has been thoroughly cleansed, and the secretion of the liver moderately excited, the compound tincture of tamarac will fulfill more important indications than any remedy that can be given, both as a tonic in promoting digestion, and as a stimulant to most of the secretions. I generally add a small quantity of gum guaiacum to the formula of this tincture as heretofore given (Vol. I., page 314). This should be given in sufficient doses to regulate the bowels, and when thus administered rarely fails to keep up a healthy action in the functions of the liver.

While the general internal remedies are being used, those of a local, though somewhat general character should not be neglected. I have witnessed more sensible and beneficial effects from the shower-bath, taken every morning immediately upon getting out of bed, than from any other remedy which I have ever prescribed in chronic rheumatism. It should be taken moderately at first, until the susceptibility of the system to its influence is ascertained. At first it will be well for the patient to be wrapped in a flannel blanket in the warm bed, where he should remain until reaction takes place, being careful not to go to sleep. But if the system is found to react readily, the patient may be thoroughly rubbed with a crash towel until reaction takes place, and then dress.

The *local disease* will be benefited by the general treatment referred to, but in addition it will generally be found necessary to resort to local means. Thus I have often directed from three to four quarts of water, at about 100° F., to be poured from the spout of a tea-kettle, at a height of three or four feet, upon the joint or part affected, followed by a thorough rubbing with the volatile liniment for fifteen or twenty minutes, and moderate motion in the joint. I have, also, in some cases found advantage from thoroughly steaming the parts by closely covering them over a tub of hot water, evaporated by the introduction of hot bricks, and

after that, rubbing as before, with slightly increased movements in the joint affected. When effusion within the synovial capsule has taken place, if the measures I have directed fail to remove it, cups may be applied, a few teaspoonfuls of blood taken, a caustic issue produced a short distance from the part affected, and the whole joint freely rubbed with the tincture of iodine, followed after each application by a tight roller.

In some instances the subacute form of rheumatic affections, either from neglect to apply appropriate treatment at an early day in its progress, or from the naturally persistent character of the attack, presents a striking similarity to the true chronic disease; but will be found to retain some remnants of the original local nervous irritation in the roots of the spinal nerves. In these cases the main treatment applicable to the genuine chronic disease will be found equally appropriate; but to be equally effective will require some attention to the original seat of the affection. The irritating plaster, applied over the tender points found in the spine, allowed to remain until a free discharge takes place and then removed, but again applied after the part has healed, will rarely fail to afford relief in the case.

[In rheumatism, as much perhaps as in any other disease, it is important to be guided in treatment by the peculiarities of each case. No general formula can be relied upon for the cure of this disease.

In *sthenic cases*, with a high grade of fever, hot skin and full, hard pulse, an active cathartic such as the compound powder of senna and jalap, or an infusion of senna and Epsom salt should be prescribed. In torpidity of the liver the following pill may be used :

- ℞. Podophyllin, grs. ij.
- Leptandrin,
- Gamboge, āā grs. iv.
- Acetous ext. colchicum, grs. iij.
- Extract tarax., grs. vj.

Mix and form into six pills.

S. One to be taken every four hours until the bowels are freely moved.

The following may be used at the same time as a diaphoretic :

- ℞. Infusion of *asclepias tuberosa*, f3iv.
- Nitrate of potassa, 3j. M.

S. Take a tablespoonful every four hours.

In a *dynamic rheumatism*, characterized by frequency and fullness of the pulse and profuse perspiration especially during sleep, stimulants and tonics are to be employed. I have been pleased with the effects of the following prescription in such cases :

R. Tincture of prickly-ash berries, f3ss.
Sulphate of quinia, grs. viij.
Distilled water, f3ss.
Elixir vitriol gtt., xl. M.

S. Give a teaspoonful every four hours in a wineglassful of water.

The ammoniated tincture of guiac in the dose of a fluid-drachm, may be used instead of the above or alternated with it.

The treatment in the absence of an acute paroxysm, should be directed to two objects; depuration of the blood, and the formation of good blood. The alterative course mentioned in Prof. Jones' treatment is well adapted to the former of these indications. The 'alkaline carbonates especially the bicarbonate of potassa is highly recommended for the same purpose, and lemon juice has been extensively employed. To accomplish the second indication, tonics such as gentian, columbo, prunus virg., ptelea, cornus flor., quassia, etc., should be employed and some preparation of iron should by all means be used.

As a local application I have found much benefit from bathing the part with equal parts of tincture of arnica and tincture of aconite root, and then inclosing it with flannel, or what is better, cotton batting, saturated with castor-oil.

Enclosing the part with sulphur kept in contact with the skin by a flannel bandage, and retained for a week or two, is said to have been sometimes successful in obstinate cases of subacute and chronic rheumatism. S.]

LECTURE LXXXVI.

NERVOUS DISEASES—CONTINUED.

Spinal Irritation: Its Relation to Rheumatism; Protean Manifestations; Pulmonary Affections; Dyspepsia; Laryngeal Disease, etc.; Diagnosis. Treatment; Quotation from Dr. John Marshall; Concluding Observations. Paralysis or Palsy: Definition; Divisions; Rarely Idiopathic; General Palsy; Hemiplegia; Paraplegia; Local Palsy; Causes; Diagnosis; Prognosis; Treatment. Hydrophobia: General Observations; Cases Related, and Treatment; Conclusion.

SPINAL IRRITATION.

The close relation that rheumatic affections bear to other disorders having their origin in the great nervous centers, renders a consideration of the subject of spinal irritation particularly appropriate in this connection. Disease of the spinal nerves, producing the symptoms of acute rheumatism, I hold bears the same relation to inflammatory action in those nervous radicals, that the less grade of excitement, seated in the same parts—which may be called irritation—bears to the symptoms constituting neuralgia from spinal irritation. To reverse the proposition, acute rheumatism has the same relation to inflammation in the roots of the spinal nerves, that the various reflected diseases sometimes called neuralgia, have to irritation of the same nervous radicals.

The *protean manifestations* of spinal irritation, and the great liability that exists to mistake some of the reflected disturbances, produced by disease seated in the spinal nerves, for other and more serious organic disorders, remote from the source of trouble, renders the consideration of this subject scarcely less important to the student of medicine than that of any other topic connected with disease. Scarcely an organ of the body can be named that is not by turns made the scapegoat upon which these great nervous centers play off their fantastic representations of serious organic or functional disturbances, and thereby mislead the unsuspecting attendant at the expense, to the patient, of a severe course of medication directed to a disease having its real

seat far removed from the organ manifesting embarrassment and functional disturbance. Thus, organic *affections of the heart* have been so closely simulated, and the symptoms of disease of that organ have been so fully developed by disease of the spinal nerves, as to greatly embarrass the most careful observer, and render a solution of the difficulty only possible by a physical exploration, which modern science has taught us to make. Irregularity and palpitation of the heart, general nervous irritation, loss of appetite, gastric derangement and debility, and all the attendant symptoms of cardiac affections, are produced by irritation of the spine, and promptly relieved by the measures adapted to that disease.

Thus, too, various forms of *pulmonary* disorder are closely simulated by disease in the roots of the spinal nerves, so readily recognized by pressure upon the vertebræ of the spinal column as to leave no doubt of the fact. A troublesome, irritating cough, night sweats, rapid pulse, hurried respiration, and all the general leading symptoms of a rapid consumption, I have observed in numerous instances, but without the corresponding physical evidences of pulmonary disease, and, these symptoms having been associated with tenderness under pressure upon certain portions of the spinal column, no doubt was left that they had their origin there. In like manner, *asthmatic symptoms* are frequently produced, manifesting all the severity and urgency of the genuine disease, greatly aggravated by pressure over certain vertebræ of the dorsal portion of the spine, and promptly relieved by appropriate applications to the seat of the disorder. The same may be said of affections of the liver. Pain in the right side, extending to the shoulder, furred tongue, dyspeptic symptoms, and other evidences indicating liver disease may be observed; yet there will not be the usual tenderness over the liver, but great sensitiveness upon pressure on the spine, and other indications that disease there situated is the essential cause of all the symptoms existing in the case.

Few diseases are more frequently met with than *dyspepsia* or *indigestion*, depending upon nervous irritation, readily traceable to the spinal and sympathetic nervous centers, and never so promptly cured by any measures directed to the digestive organs as by appropriate treatment of the spine. From the same cause, various *intestinal disorders* are frequently developed, which remedies applied directly to the symptoms in the case will rarely ever relieve, while the uniform effects of counter-irritation upon portions of the spine

involved are favorable to the permanent cure of the disorders. Different forms of *renal disorder* have, in many instances, been clearly traceable to deficient innervation, or to a high state of irritation in the roots of the spinal nerves. *Diabetes and Bright's disease* have so often been found connected with spinal irritation, and so greatly relieved by directing treatment to the irritated nerves, as to leave no doubt of their connection with the nervous disorder. *Uterine affections* of many different forms, especially the various displacements and functional disorders, have been so often traced to spinal irritation as to almost preclude the existence of these affections from any other cause. *Prolapsus uteri*, so often the pretext for abdominal trusses and other abominable mechanical contrivances, has been found in most instances in my experience, connected with palpable irritation in the spinal chord, and generally relieved when that source of disorder was cured. *Retention of urine* from spasm of the neck of the bladder I have in more than one instance found referable to spinal disorder, as well as promptly curable when that difficulty was removed. For more than twenty years I have invariably found in my practice *phlegmasia dolens* connected with spinal irritation, and in every case promptly relieved by measures appropriately directed to that affection. I have, therefore, discarded as utopian the doctrine of lymphatic inflammation or of phlebitis—beyond what might grow out of the irritation referred to—as the true pathological character of this affection.

More than half the cases of chronic *laryngeal disease* that have come under my observation I have found originally referable to spinal disturbance, and no measures were so efficient in their cure as those directed to that cause of disease. Many cases of *chronic ophthalmia* have been found perfectly intractable and unyielding under any course of medication I could devise, until measures were directed to the cervical vertebræ calculated to relieve the irritation there found in such cases. It may be asked what relation the eye holds to the nerves, either of the medulla oblongata or spinalis, and wherein the local inflammation of the eyes could be connected with irritation of the spine. I answer that, while the muscular nerves of the eyes have their origin directly from the anterior portion of the medulla oblongata, or top of the spinal marrow, the optic nerves, also, if they do not originate directly from the medulla oblongata, are yet so immediately connected with it as to be most sensibly affected by irritation existing in the upper

part of the spinal cord. A singularly interesting case that occurred in my practice, is more than suggestive of the idea that not only the optic nerves, but also the nerves of all the other senses have their origin from that portion of the medullary tract. The case was this. During a protracted fever, a patient of mine was confined at about the seventh month of gestation, and delivered of twins. Both were alive, and both lived for some days. One was perfect in all its physical organs; but the other appeared to have no cerebrum, and there was a small opening through the scalp, at about the point for the anterior fontanel, into the longitudinal sinus, out of which a very slow but constant oozing of blood occurred, which no applications were competent to arrest; and finally, after four or five days, the child became exhausted from the gradual loss of blood, and died. It was a stronger and apparently more healthy child than the other, and in fact lived longer, notwithstanding the hemorrhage. It seemed to gaze about with an apparent gratification of its organs of sight. It cried as other children do, nursed with as much avidity, urinated, defecated, and performed all the functions of animal life as perfectly as any new born infant, and with a cap upon its head to hide the deformity, no one would have suspected, from its appearance or its actions, that it was in any way different from the other, or from any child of its time or age. Upon examination not one particle of either cerebrum or cerebellum existed in the case. The medulla was found passing through the foramen magnum as blunt and truncated as my thumb, and to it I was able to trace the optic, olfactory, and all the other cranial nerves. Now I would ask if the brain and a portion of its basilar or cranial nerves, as they are called, are prolongations of the spinal marrow, or in other words, if the spinal marrow is the first in the formative process of the nervous system, and the brain grows out of the spinal nerves, how can it be possible that those nerves, which should be, and are formed secondarily to the brain, if they have their origin in the nervous matter of that organ, could ever have an existence without a prior development of their parent source? Up to the time of Gall and Spurzheim the optic nerves were universally believed to have their origin from the optic thalami; but those gentlemen traced the fibers of the optic nerves beyond those bodies to the quadrigemina, and I have no doubt from the apparent impossibility of reconciling the facts developed by the case I have related with any known laws of the animal economy, that future research

will enable us to show, what analogy strongly suggests, that all the nerves of sense as well as those of motion have their source in the nervous matter of the spinal cord.

I desire not to be misunderstood in relation to the disorders growing out of spinal irritation. For while I have no doubt that all the diseases I have mentioned, and many others, are frequently simulated by spinal irritation, and some of them wholly referable to this cause, I do not by any means wish to be understood as saying that most of those affections are not more frequently produced by other causes in which spinal disorders play no material part. Therefore, for the purpose of preventing unnecessary and often heroic medication in disorders where simple and mild measures are sufficient for the purpose, it becomes a matter of no small moment to form a correct

Diagnosis.—Although the general nervous excitement and changeable character of the symptoms in diseases simulated by spinal disorders, would naturally suggest the true character of the case, yet such symptoms are not sufficiently diagnostic to be relied on in a course of treatment. The main reliance in arriving at a correct diagnosis of these cases is mostly of a negative character. The absence of the physical signs present in almost all organic affections, which a careful examination will rarely fail to detect, will be quite satisfactory and conclusive. Thus in diseases of the respiratory organs, produced by spinal irritation, the absence of the physical signs, always more or less present in all organic affections of those organs, would be conclusive that the disease was not structural, but functional. But however conclusive you may think these circumstances to be, a careful examination of the spine by pressing upon each of the vertebræ; or, if the spinal column was found unusually stiff and unyielding, pressure made on each side of it, may thus more readily move the joints, and detect the tenderness existing at those places.

Treatment.—Beside the indispensable local treatment for spinal irritation, most cases require some general measures. In regard to these however, we should always be governed by the indications which the state of the general system presents. Such a course of general restoratives and tonics as the individual cases may require; the specific remedies that experience has taught us are best calculated to relieve the troublesome symptoms connected with the organ manifesting derangement; free bathing and friction, and such a course of general exercise as the condition and circum-

stances of the patients will justify ; together with cupping the spine over the points found involved, and the application of the compound tar or irritating plaster to the spine, are, in general terms, the measures which will probably afford the speediest relief in these affections.

In any cases presenting periodical qualities, as many frequently do, the free use of quinia and iron for a few days, followed by the compound tincture of tamarac if not objectionable from gastric irritation, will rarely fail to hasten the cure. When the spinal disease is connected with an impoverished state of the blood, the tincture of muriate of iron may be given. The bathing should be free and regular, at least once every day, and followed by long continued friction, especially over the spine. And the cups should be applied once or twice a week over the parts found to be tender under pressure. Most cases will be benefited by scarifying and taking a small quantity of blood ; but when this is not desirable, dry cups may be freely used. After the more decided symptoms of irritation have been relieved by cupping and friction, more lasting benefit will be realized from a discharge kept up by the use of the tar or irritating plaster, applied in strips three inches wide and four inches long, to the parts of the spine found involved, and changing as occasion may require.

I have thus given you the main and general course of treatment upon which I have successfully relied for many years in my own practice. But as more fully entering into the philosophy of the therapeutic measures I have recommended, and especially as sanctioning the views I have endeavored to inculcate, I can not refrain from reading to you a portion of the treatment, with some remarks, of Dr. John Marshall, a Scotch physician of great eminence, who published a treatise upon diseases of the heart, lungs, stomach, liver, etc., occasioned by spinal irritation. After having discussed the subject at considerable length, and produced cases to illustrate the different forms of the disease, he proceeds to give his views of their treatment. He says :

“In the whole result of those seventeen years of study and practice, I find not one single reason to alter my early opinion, that it is on the medium of the surface we must principally depend in the cure of nervous debility or irritation. In the sulphate of quinia, and the salts of iron, zinc, and copper, as well as the vegetable bitters, combined with alkalies and gentle laxatives, I have found most admirable adjuncts ; but never yet did I succeed with

these alone in curing any case of nervous or medullary irritation, which had advanced so far as to assume the character of any organic disease.

“The absorbent powers of the skin, and the influence of such absorption, even on the functions of the viscera, have been observed from the days of Hippocrates downward, and are so fully known and established as to require no argument from me to prove their existence. It may not, however, be inappropriate to produce here a few familiar examples of the fact.

“If garlic, onion, mint, or in short, any strong scented plant be handled, placed in contact with the soles of the feet, or rubbed smartly upon any part of the body, the effluvia of it will, in a very short time, be exhaled from the lungs by the breath, from the whole surface of the body by the perspiration, and be very perceptible in the odor of the urine. The same thing will happen even more rapidly with sulphur. There is not the slightest reason to suppose that these substances, or any of their component parts, are more readily absorbed by the skin than any other; it is merely that their volatile aura renders their presence more distinct and undeniable. We know, in fact, that the skin is capable of absorbing so large a quantity of simple cold water, and directly conveying it to the circulating mass, that persons traveling, under the influence of raging thirst, have found that agonizing sensation in a great measure relieved by exposing their naked bodies to a hearty shower of rain.

“I sincerely hope and believe, that the time is not far distant when such facts as these will be turned to the improvement of the curative art, more usefully and more extensively than they have ever hitherto been.

“While we keep the above remarks in view, let us recollect the very close connection and communion existing between the skin and the nervous system; reverting at the same time to the fact, that the vascular and absorbent system derive their energy from the nervous; and we shall see reason to conclude that it is solely through the agency of the latter that dermal absorption takes place; and from this it inevitably follows that whatever is absorbed must have a very direct nerve influence.

“Not only do the whole of the spinal nerves send filaments directly to the skin, but the cerebral nerves, and those of the sympathetic system, do the same, either directly or by anastomosis. If any uninitiated wishes to ascertain for himself to what degree

the skin and the nervous system are connected, let him recollect that in the nerves alone the sensations of pain or pleasure reside; and taking the finest needle that ever was made, let him try if he can find the breadth of its point, in any part of his own skin, where pain is not produced by its insertion. There is no danger of the experiment being too often repeated.

“What the external applications are, by which we may hope most surely to alleviate symptoms, or effect a cure, in cases such as those we have had under consideration, is a subject to which, for the last seventeen years, I have given the closest and most unwearied attention.

“To begin with those which produce cuticular irritation, such as blisters, ointment of tartarized antimony, and the ammoniacal and terebinthine liniments; I have given them all the fullest trial, and found them all useful, each in their own way and time, with the exception of the terebinthine, the stimulant properties of which I have found more than counterbalanced by their tendency to produce irritation of the kidneys and neck of the bladder.

“To the antimonial ointment I am by no means partial; yet the foregoing cases, particularly the second and third of chorea, will show that I have occasionally succeeded in making a cure with it, where both blisters and issues, as well as depletion, had entirely failed. There may be two reasons for this: It is generally applied to a much larger surface, and the discharge produced by it is from a perfectly different source, and of a different character, from that produced by blisters, approaching much more nearly to the nature of pus. The ordinary action of cantharides is confined to the epidermis, while the antimony, penetrating the cutis, exerts its influence more directly upon the nervous and muscular tissues.

“My objection to its use arises from the capriciousness, as well as harshness, of its operation; the great and extremely irritating pain which it occasions, and the severe sickness of the stomach consequent on its absorption into the system; often producing effects, in a delicate frame, hardly less distressing than the disease it was intended to remove. Moreover, in cases where I have found its application a complete failure, I have succeeded with what, *a priori*, appeared a much less efficient agent. Nor could I ascribe this altogether to idiosyncrasy; it rather seemed to me to arise from some, as yet, unexplained difference in the nature of nervous disorders.

“Ammoniacal liniments I have used extensively, and with the

very best effects; yet they too have occasionally failed me; and they have this disadvantage, that, in cases where it is not desirable, they irritate the skin, and produce an eruption.

“To discover an external application which would stimulate, or in fact act as a tonic on the nervous system, without, at the same time, being an irritant, has been for many years the object of my most anxious and indefatigable search. Within the last twelve months, I have seen reason to believe that I have succeeded in extracting such from a very simple substance; but the cases on which I have as yet tried it, though perfectly conclusive in themselves, do not, in my opinion, form a sufficient warrant for my, at present, laying it before the profession or public. Few things are more truly disgusting than the pompous fracas with which, in the present day, new remedies are thrust into notice, by persons whom the experience of others proves to have been actuated, in their reports of the extraordinary virtues of each successive trash, either by a blind enthusiasm, or by motives far less justifiable.

“Simple friction, even without any rubefacient, over the seat of the principal nervous centers, and over the whole thorax and abdomen, I have found of very important service, particularly in the earlier stages of nervous debility. But, to render friction of any use, whether with or without rubefacients, depends entirely on the steadiness of its repetition, as well as on the length of its application. It is not rubbing the spine, or the seat of the sympathetic system, or the thorax, for a few minutes at a time, and then wholly neglecting it for days and weeks together, that will avail. Friction, to be of any use, must be continued for an hour at a time, at least twice, if not three times, each day, so as to prevent the nervous system from losing, in the interval, the impetus given to it; and if not so practiced, it may as well be omitted altogether. Nor, even with this attention to the steadiness and frequency of its application, must it be expected that the sanitary influence will become immediately evident? It stands upon the face of the foregoing cases, that many of them were months, none less than six weeks, and several of them a whole year, before they were *thoroughly* cured. Yet, among forty—with the exception of two which were fatal (and be it observed that those two were very far advanced before they came under my care), and one which proved incurable—the *whole* finally regained perfect health, and are at this day alive to testify the truth of what I say. Perhaps it will not be considered irrelevant if I here mention, that these

two are the only patients I ever lost while under treatment for spinal or nervous irritation, and I have treated some hundreds. I do not allude to this from any contemptible vanity, but simply from the wish to show how tractable such cases are, when met with patient perseverance, and a due admission as to their real nature and source.

"Having already mentioned the medicines on which I principally rely in the treatment of these cases, I have here nothing of any importance to add, except to warn my younger brethren, who may now turn their attention to the subject, against the use of mercury, in any of its forms, in treating spinal or nervous irritation. Throughout my whole experience, I have found it most decidedly injurious; so much so, that at one period I consistently refrained from prescribing even a half-grain of calomel per diem; and this arose from my finding that the most irksome and intractable cases I ever treated, were those which had been mercurialized previous to their coming under my care. Motives of delicacy toward others have induced me to suppress not a few of these, some of them of very recent occurrence.

"Excessive purgation is another measure which I have found very decidedly hurtful.

"If the bowels are loaded or more than commonly torpid, of course they must be relieved, and completely cleared out; but instead of doing this by the more violent drastics, I would recommend moderate purgation joined to the daily use of Juke's apparatus; and when the fecal matter lodged in the *prima viæ* is thus got rid of, very gentle laxatives (such as will keep the bowels soluble, but not *purged*), is that practice which I have uniformly—particularly when I combined the laxative with extract of hyoscyamus—found most successful.

"The use of the Buxton baths I have found of the most indubitable efficacy, in every case in which I have had it in my power to send a patient to them. * * * * *

"Change of air and scene, particularly if it be to a very dry atmosphere, is a measure which ought never to be lost sight of in treating cases of nervous or spinal irritation. It is only when a very considerable advance toward a cure has been made, that the sea-side or sea-bathing is advisable. I have always found the greatest benefit accrue from having my patients as much in the open air as their strength will admit. The very utmost care however, ought to be observed to prevent exercise ever being pushed

the length of fatigue; because every time a person laboring under irritation of the spinal nerves is fatigued, he has lost just so much ground on the road to recovery. * * * *

“To keep the mind in an easy and cheerful frame I have always found to be of the last consequence. Anxiety, deep thought, the indulgence of the angry passions, or habits of abstruse reasoning, are fatal barriers to a cure. Light reading, or any pursuit that occupies the attention without fatiguing the mind must be had recourse to; great judgment however is required in regulating this point; for what is abstruse study to one, is light and agreeable reading to another.

“While we pay the utmost attention to prevent a patient making heedless or undue exertions, we must be no less careful to prevent their thoughts from dwelling on their own situation, or watching every little turn of sensation. Nothing can be more fatal than such a practice. Surrounding friends should never on any account discuss the patient’s state or symptoms in his, or more especially in *her* own hearing; or repeat what this or that doctor has said; or in short allude to any thing that can keep uneasy apprehensions present to the mind.”

“*Concluding Observations.*—It appears to me quite impossible for even the most bigoted or most ignorant members of our profession to shut their eyes to the fact that, owing to the light of anatomical certainty thrown upon the observations and experience of practical men, by the splendid discoveries of Bell and Bellengeri, a most important change is about to take place in our views as to the pathology of the nervous system. For my own part, I most confidently anticipate that the time is at hand when all the rubbish of ‘anomalous cases’ and ‘intractable and mysterious diseases’ will be swept from our periodical literature; and when ‘systems of nosology,’ only calculated to obscure the subject they pretend to illustrate, will be left to rot unnoticed and undisturbed on the most inaccessible shelves of our libraries.

“Nevertheless, I am fully aware that many, very many of the profession will stick, with all the tenacity of limpets, to the rock of ancient usage; and meet these new views and every thing that goes to support them, with the same virulence and hostility, as if the calm examination of their claims to attention, or the testing of their accuracy, were to inflict a positive injury on the dearest interests of society! This unfortunately is part and parcel of human nature. * * * *

"Prejudice is the bane of advancement in every department of human knowledge; but in none does it tell more heavily against the weal of our common nature than in our profession; for never will any man practice it with either true dignity or real usefulness, till he casts from him every *trammel*, whether of education, theory, or authority, until, in short, he hears with his own ears, sees with his own eyes, and judges with perfectly unbiased mind. * * That many in the profession will be found to cavil at the opinions I have advanced, and the facts I have adduced, I make little doubt; but conscious as I am of the strength of my general position, and of the purity of the motives which have induced me to lay the present work before the public, I shall endure, with great indifference, the ephemeral remarks and opinions of such persons. *Mag-na est veritas et prevalebit.*"

[Dr. Marshall enunciated the same sentiments, manifested the same spirit, and indulged the same confidence in the ultimate triumph of truth, that characterize the true Eclectic in every age and in every country. S.]

PARALYSIS, OR PALSY.

As my hour has not quite expired, and as this must be my last lecture, I propose to occupy the few remaining minutes by saying a few words upon one or two other nervous disorders, not pretending to be minute, or to even fully present all the *important* points connected with the subjects.

Paralysis may be *defined* to be a loss of sensation and motion, and may be partial or total in the part affected. At least it is often so nearly complete as to render it impossible to produce motion or any appreciable sensation by any means we can use. In some instances, all the nerves of sensation and of voluntary motion appear to be affected at the same time, constituting what is termed *general palsy*. But the most common forms of paralytic affections are such as involve either one side of the whole system, including the face, tongue and extremities, which is called *hemiplegia*, or the lower part of the body from the hips down, constituting *paraplegia*. It is not uncommon, however, for a single limb or set of muscles of a certain part of the body to be affected, while the rest of the system is exempt. This is called *local palsy*.

The investigations of Sir Charles Bell and others have explained what had previously been a mystery to the profession, namely: how either sensation or motor power may be lost, while the other is

retained, in what is termed *partial* palsy. Their experiments showed that two sets of nerve-fibers issued from the spinal cord, and that the scission of one destroyed the sensation of the part to which that nerve was distributed, while the motion of the same part was perfect; and that the scission of the other bundle of nerve-fibres destroyed the power of motion, thus producing *complete* paralysis of the part. It is most usual for both to be impaired at the same time, though it is quite common for these two powers to be simultaneously affected in different degrees.

Palsy can *rarely* be said to be *idiopathic*, as it is mainly only a symptom connected with deep-seated and grave disorder. In this case the difficulty may be associated with disease of the brain and spinal cord, or with a local obstruction or embarrassment in the roots of the spinal nerves. But local palsy may depend upon a loss of power in the extremities of the nervous filaments distributed to a particular muscle or set of muscles, as in certain palsies produced by poisonous substances. Whatever the connection that may exist between the disease of the brain and the spinal nerves, in any form of paralysis, we can scarcely doubt that disease of the nervous radicals is necessarily independent of disease in the brain in producing palsy. We have seen that animal life, in all its apparent attributes, was as perfect without a brain, or any portion of it, as when the brain was present, thus showing that the functions of the brain are not necessarily connected with sensation or motion; and that, while consciousness and thought are alone the attributes of the brain, motion and sensation have their seat in the spinal nerves. And, though injuries to the brain may be connected with like difficulties in the spinal nerves, thus producing palsy and, at the same time, seriously obstructing the mental manifestations, yet the most serious injuries to, and disease of the brain may exist without destroying or even diminishing either sensation or motion. So also a blow given to the spinal cord before it enters the brain, may entirely destroy sensation and motion below without embarrassment to the brain or its manifestations. It should not be inferred, however, that there is not the most intimate relation between the brain and spinal nerves, and also between the manifestation of their several functions: sensation and motion and mind. And it is not common for either to be involved in serious lesion without the other being affected.

General palsy, affecting the whole system, is very rare, except from injuries to the spine at the cervical vertebræ. An instance

of the kind occurred in my practice, produced by a fall upon the back of the head, affecting the cervical nerves; and while all the mental powers were unembarrassed, as complete a loss of sensation and motion existed as was possible without the entire death of the whole system below. Not a finger, nor a muscle below the head would obey the will, nor was there a consciousness of any action in the involuntary muscles of the bowels or bladder, and the consciousness of a desire to evacuate those organs must have arisen entirely from the supposed necessity.

Hemiplegia most frequently follows apoplectic attacks, and no doubt the spinal nerves are involved in the same sanguineous engorgement or effusion which affects the brain. In some cases it begins at an extremity and gradually extends to the rest of the side. This, as before stated, is a palsy of one side, affecting usually one eye, half of the tongue, the muscles of one side of the face, and all the muscles of both extremities on that side. The paralysis is generally more complete in the arm and hand than the foot and leg, when there is a difference in this respect.

Paraplegia may be confined to the lower extremities, or it may extend further up the spine, and involve a part of the body. In this case the sphincter muscles of the bladder and bowels are more or less affected. This form of palsy sometimes results from direct injuries to the spine, or from disease in the spinal cord. When it results from disease in the spine it mostly comes on gradually, commencing with a sense of numbness, or a tingling feeling in the extremities. But it gradually increases as the local difficulty becomes aggravated, until sensation and voluntary motion are nearly or entirely destroyed. If the spine above the sacral nerves is affected, the muscular structures of the bladder and rectum become affected, and retention of urine and extreme costiveness follow, so that the bladder has to be evacuated with the catheter, and the bowels by means of injection. But when the disease becomes more complete the urine is passed involuntarily, and control of the alvine discharges is lost. In such cases sloughs upon the back and extremities occur, and an entire loss of vitality in the parts frequently follows before the death of the individual.

Local palsies frequently occur from injuries done to particular nerves, and are liable to be produced in any part of the system. Thus paralysis of one side of the face occurs without producing or being accompanied by any similar affection elsewhere, or the palsy may be confined to the lids of one eye, or the muscles of

deglutition, and instances occur in which the tongue is the exclusive seat of the difficulty. In some cases the neck of the bladder alone is affected, or the sphincter muscles of the rectum. The nerves of the special senses, also, become not unfrequently the seat of the paralytic disorder, producing a partial or entire loss of function in the organ to which that nerve belongs. Thus one or both of the optic nerves frequently become affected, producing a partial or complete amaurosis, and so of the other senses.

Shaking palsy is frequently met with, though strictly speaking this can not be called a palsy, as the only symptom is a mere trembling of the muscles. A kind of paralysis is often seen, produced by the local poison of lead, affecting the hand and fore arm. This is an instance in which the palsy begins at the extremities of the nervous ramification and extends toward the origin.

Causes.—I need not repeat in this connection that, to produce palsy, the nerves or the nervous centers must be affected. Therefore, whatever impairs the powers of those organs may produce it. As already remarked, it may be connected with disease of the brain, but it may be, and often is, in all its modifications, entirely independent of that organ. Hemiplegia does more frequently occur in connection with diseases of the brain, and, therefore, the latter may be said to be among the causes of palsy. Injuries of the spine, or whatever tends to produce serous or sanguineous effusion either in the substance of the spinal cord, or within its membranes, may produce palsy; and I can scarcely doubt that, whether palsies be connected with disease of the brain, or are independent of it, except where it is the result of pressure from depression of some portions of the spinal column, the essential cause of them is effusion of a serous or sanguineous character, or sanguineous engorgement either in the spinal cord, or the nerves having their origin from it. (See Disease of nervous functions, Vol. I., page 77, et seq.)

Diagnosis.—Very little difficulty will be experienced in recognizing the existence of palsy. If it be a general paralytic affection, besides the insensibility and want of muscular power in the system, the general appearance of the individual and the absence of any comatose or stupid condition will be sufficient to determine the case. The symptoms of the other forms of palsies are sufficient of themselves to settle the true character of the disorder.

[Where reflex action continues in a paralytic part, the seat of lesion is above that portion of the spinal cord with which the

nerves of the part are connected. When the palsy is general the lesion must be referred to the brain. S.]

Prognosis.—A large majority of paralytic cases either entirely recover, or linger for some length of time, and finally die from disease of the brain. Palsies arising from extensive serous or sanguineous effusion are more likely to prove fatal than those occurring more suddenly, and in which a mere engorgement can be supposed to exist. Paralytic affections following inflammatory diseases are more likely to be connected with disorganization of the nervous structures, and are therefore less likely to recover.

Treatment.—Few cases of palsy will be found in which either effusion or sanguineous engorgement in the spinal nerves does not exist, except those of a local character. Therefore the most important indications are, to relieve this capillary congestion or engorgement; to promote the absorption of effusion that may exist in the spine; and, also, after these indications are fulfilled, to stimulate the nerves affected to a more sensible manifestation of their respective functions. To fulfill these several indications, measures both of a local and general character will be necessary. The first will be most promptly answered by cups and scarification applied to the spine. If the attack is one of a paraplegic character, they should be applied only to the lower part of the spine. But if it be hemiplegia, the whole length of the spine should be freely cupped. These applications, after being repeated for a day or two, should be followed by long and narrow irritating plasters applied directly over the spine where the cups were used. They will, in such cases, be followed by a copious purulent discharge, and will rarely fail to have a beneficial effect upon the case.

[A better plan of counter-irritation is, to produce a number of suppurating spots, each about the size of a quarter of a dollar, and situated from two to four inches apart. S.]

Most cases will require at first the operation of free cathartics. But from the great torpor that usually exists in the whole system, it sometimes becomes somewhat difficult to effect it. Generally, however, a full dose of the compound powder of senna and jalap will succeed. If the first dose should not answer the purpose, it may be repeated, combined with one grain of podophyllin and two of leptandrin. These will rarely disappoint your expectations, though if their operation should be found tardy, they may be assisted with stimulating purgative injections, or the same doses may be repeated, until the desired effect is produced. After the first free operation

is procured, less difficulty will be experienced, and the bowels may be kept moderately open with Seidlitz powders, or some mild cholagogue aperient. Stimulating frictions to the extremities, and to the parts of the spine not covered with the plaster, should be made at least every day, or twice a day, if thought necessary. The cold sponge-bath, or when the capillary circulation is found too feeble to react after a cold bath, the warm whisky-and-broke-water bath, may be frequently used.

After these various measures have been effectually applied until the symptoms of local determination are mainly relieved, a change in treatment, in some respects, will be necessary. The local appliances should however be continued, while more stimulating remedies, affecting the nervous system in general, and others of a more local character, should be used. The internal use of strychnia may be commenced in moderate doses, and gradually increased until its specific effects are observed upon the muscles, when it may be continued more moderately. As a substitute, the *rus toxicodendron* may be used. Galvanic currents and electric shocks should, at the same time, be applied, placing one pole of the battery on the spine, and the other on the nerves of the affected limbs, changing the position of the balls both on the spine and the limbs. When the patient has sufficiently recovered to bear the shower-bath, it will often be found to have a very beneficial effect, not only on the general system, but also in exciting healthy action in the nerves of the parts affected. In paralytic affections of the bladder and kidneys, the tincture of cantharides and spirits of turpentine are the most appropriate, as heretofore stated.

The diet should at first be light; but after the symptoms of the most active stage have disappeared, the diet should then be more nourishing and substantial. "As soon as patients have sufficiently recovered to admit of exercise in the open air, this will be found highly important to convalescence, and should be advised to the full extent of the patient's ability to bear it without too much fatigue. Riding and walking should be practiced as regularly as the ability and circumstances will permit.

HYDROPHOBIA.

Very little of a practical character can be said with any great confidence on the subject of hydrophobia, and I have no time to spare in discussing the various theories connected with it, but refer you to any respectable author, who will give you the stereotyped

theories, some of which are as old as the disease. I can not however permit the present occasion to pass without endeavoring to perpetuate the few practical items in regard to this disease, which I have gathered in my experience, and thus put in the possession of others what I have reason to hope and believe may be demonstrated to be a remedy for this hitherto most frightful and fatal disorder.

I need scarcely say to you that the whole catalogue of narcotic, stimulant, antispasmodic, and sedative therapeutic measures have been rigorously tested in the treatment of this affection, and thus far the testimony is unanimous to their utter inefficiency in preventing, curing, or relieving hydrophobia. The only measure on which the most modern authorities rely, is the prophylactic influence of excision of the wounded part, and that within as short a period after the wound is made as possible; of course the sooner it is done the greater the safety.

Cases.—About eighteen years since I was called into the family of a very intelligent and worthy gentleman, formerly a resident of Pennsylvania. During my earliest acquaintance with him, he informed me that he had in his garden a remedy for hydrophobia, that he brought the seed with him from his native State, and had continued to propagate it in a small bed reserved for that purpose where he had first planted the seed. He said it went to seed every year, and was thus spontaneously perpetuated, though annually, when it was in full blossom, he cut and dried a small bundle of it. He knew the common name, which was "*red chickweed*," or *scarlet pimpernel*. I found it to be the *anagallis arvensis*, an annual little plant, common in some of the Southern States, as well as in Pennsylvania, and resembling the white chickweed, but having a red or scarlet blossom. This gentleman informed me that he had known and witnessed its use, in a number of instances, in animals laboring under spasms of the disease, with entire success; that where he came from in Pennsylvania every family for miles around kept it; that he had been so directly and credibly informed of its success in a number of cases when administered to the human species after the disease was developed, as not in the least to doubt the fact, and that he should feel as safe, in case of an attack of hydrophobia, if he could have the remedy administered, as in any common disease. He described its effects upon the system, when given as directed, and his description was fully verified in two instances in which I afterward applied the remedy.

A girl was bitten on the wrist, without any provocation, by a

dog belonging to the family, which immediately left the house and bit a number of hogs as he went out of the yard. He passed on to the next farm-house, where he bit other animals, and so on for some miles before he was killed. All the animals that he was known to have bitten had the disease. As it was not known nor suspected that the dog was mad till the family learned he had been shot, it was three days before they became alarmed. I was called to see the patient, and found that the animal's tooth had gone into the naked wrist. I immediately cupped and cauterized it, and gave the anagallis, or red chickweed, according to the directions. Soon after taking the first dose she began to perspire, and continued in a profuse sweat, which had an offensive odor, for the two or three days that she took the medicine. The wound healed up, and she had no symptoms of hydrophobia.

A farmer, six miles from town, was bitten on his leg by his own dog. His tooth went deeply into the flesh, and made quite a lacerated wound, but it did not bleed. Not then suspecting that the dog was mad, he gave the wound no attention at that time. But the next day the dog showing symptoms of madness, was tied up, and by the next day manifested most indubitable evidences of hydrophobia, got loose, left the premises, and bit a number of other animals, all of which, so far as was known, went mad. The third day after the bite the farmer came to town to consult me. I cupped and cauterized as for the other case, and gave him the anagallis. I did not see him again for some weeks. But he afterward informed me that while he took the medicine, he perspired so profusely as to wet his clothes as though they had been dipped in water, and the perspiration was exceedingly offensive. He got well, and is still living, some ten years having elapsed since the occurrence.

The medicine is directed to be prepared by boiling about four ounces of the dried plant in two quarts of strong beer or ale until it is half evaporated or boiled away. Press out the liquid and strain it, and add to the liquid thus prepared two drachms of tincture of opium. By an adult, in ordinary cases, the medicine should be taken in half-gill doses every morning for three mornings. If symptoms of the disease have begun to be manifest, patients must take more; or if the symptoms are fully developed the whole of the preparation may be taken in one day, and made stronger by adding more of the anagallis. Persons bitten are directed to bathe the wound with the same liquid, and to change their clothing

every day while taking the medicine. The dose for children should, of course, be in proportion to their age.

[The *anagallis arvensis* is not a new agent. The ancients regarded it as a valuable remedy for poisons. Its influence in hydrophobia is denied by some of the savans of the profession, but its former reputation and the experience of Prof. Jones should lead to further experiments with it, especially in the absence of any other agent upon which reliance can be placed. If it will operate only as a prophylactic, it is of more value than any remedy that has ever been employed for the arrest of the disease after it is developed.

Death from hydrophobia takes place by asphyxia arising from frequently repeated paroxysmal closure of the larynx. Hence tracheotomy has been suggested as a remedy to prevent death, until the irritability of the nervous centers passes off.

Cannabis sativa, aconite and almost the whole list of neurotic sedatives have been tried without success. The only remedy as yet known that seems to promise any thing from actual experiment is chloroform given by inhalation, and to the extent of producing its anæsthetic effect. Cases are recorded in the journals, on respectable authority, in which this remedy was entirely successful.

Should I be called upon to treat a case I should certainly resort to chloroform. S.]

CONCLUSION.

I have thus, gentlemen, in the course of lectures which must now close, endeavored faithfully to teach you the doctrines of an enlightened experience. It has been my aim to be taught by nature in the practical department of my profession, and I have sought to reflect her teachings upon the minds of those who have listened to me. With what success and fidelity I have observed and followed the guide I early sought, will be for you to test in your daily conflict with disease; it will be for you to correct my observations and add new truths to those already established in regard to the manifestations of disease, and the effects of medicines in their cure. And you will, I trust, allow me to advise you to cherish a generous liberality in your varied intercourse with others who may differ from you, and test with unbiased minds the truths which they may claim to have developed. Be always ready to sacrifice any theories or doctrines, however honored by time or authority, upon the altar of truth, and accept in their places the demonstrations of science and observation so far as they may tend to relieve the sufferings or save the lives of any members of the human family.

LECTURE LXXXVII.

ON SCROFULA OR STRUMA.—BY THE EDITOR.

Scrofula or Struma : Definition and Synonyms ; Local Scrofula, Symptoms ; The Tubercular Deposit, When it Occurs, Its Effects, Character, Cause, and Relation to Pulmonary Tubercle ; Scrofulous Cachexy, Symptoms, Exciting causes, Predisposing causes, Predisposition to—Symptoms of Predisposition ; Treatment, For the Local Affection, For the Constitutional Disease, Prevention, Diet, Hygiene.

DEFINITION AND SYNONYMS.

According to my view of this disease, adopted after consulting the most intelligent authors who have written on the subject, scrofula may be defined to be *a constitutional disease usually manifested by swelling and inflammation of, and the deposit of tubercular matter in the absorbent or lymphatic glands.* The local affection is sometimes called *scrofulous adenitis*. The most common and obvious seat of the local disease is in the superficial glands, and especially those of the neck, though the deep-seated glands of the neck and extremities are generally more or less affected at the same time. When the disease occurs in the glands I have mentioned it is called *external scrofula*. When it attacks the internal or visceral absorbent glands, it is sometimes denominated *internal scrofula*.

The term scrofula—from *scrofa*, a breeding sow,—is a latin translation of the Greek *χοιβάδεζ*. This name appears to have been originally applied to a glandular affection of swine, and subsequently to what the ancients regarded as the same or a similar disease of the human body, because it, like the other, was characterized by glandular swellings. Some writers however, regard the name as referring to the tendency of the tumors to multiply, like the offspring of that prolific animal the sow. Modern investigations show that the disease to which the term is now applied is in no respect similar to any disease of swine, except in the fact that the lymphatic glands become swollen.

The latin word *struma*,—from *struo* to heap up,—seems to have been preferred by Galen and Celsus, and is descriptive of the gradual growth of the glandular swellings. Like most of the nomen-

clature of diseases derived from ancient authors, the terms serofula and struma are strictly applicable only to the local affection as it occurs in the superficial lymphatic glands, but since the pathology of the disease has come to be more fully understood the same terms are applied to tuberculous disease of any portion of the absorbent system.

The popular name of the disease is *King's Evil*, a term which was attached to it from the fact, that the sovereigns of England and France were believed to possess the power of curing it by their touch.

LOCAL SCROFULA.

Symptoms of the Local Affection.—The earliest symptoms of serofulous disease of the glands are swelling and induration. The enlargement is generally slow but constant, and the tumors oval in shape, movable under the skin, and single; but where several neighboring glands are affected they often form a large, lobulated, irregular tumor. In the early stage there is little or no pain and neither increased heat nor redness. Not unfrequently serofulous swellings progress no further than the stage now described, and either remain permanently tumefied, giving no other uneasiness than that arising from apprehension, or gradually subside and disappear under appropriate treatment, and sometimes without treatment.

When the local affection progresses, it passes slowly through the successive stages of inflammation, suppuration, and ulceration. The tumor becomes fixed by adhesion to surrounding areolar tissue; becomes tender to the touch, sometimes painful; unnaturally warm; somewhat red; and at last fluctuation under pressure detects the presence of a fluid in the interior of the swelling. Ulceration at length produces an opening, or if more than one gland is included in the tumor, two or more openings, and a discharge occurs which may at first consist of simple pus, from inflammation of the areolar tissue; but when the discharge comes from the substance of the diseased gland it consists of a puruloid, serous fluid and a eurd-like, or cheesy tubercular matter.

The ulcer thus produced is often indolent and ill-conditioned, continuing for a long time to discharge an offensive fluid mixed with tubercular matter. The skin around the orifice is often purple, smooth and shining; in other cases dull-red, irregular, and either swollen and hard or flabby and thin. Not unfrequently a sinus of considerable length exists, through which the discharge

from several glands reaches the outlet. Sometimes cicatrization occurs with some promptness; but these ulcers are often capricious, now appearing to be about to heal, and then breaking out again and becoming as bad as before.

THE TUBERCULAR DEPOSIT.

When it Occurs.—The deposit of scrofulous tubercular matter is generally preceded by a low grade of inflammation causing enlargement and increased vascularity of the gland. Dr. Phillips says “The many opportunities I have had for examining lymphatic glands before and after scrofulous matter has been deposited in them, have satisfied my mind that before the gland receives the deposit, it undergoes considerable change; it becomes enlarged, its vascularity is increased, and its consistency is almost flesh-like; this change in its condition I conceive to be the result of inflammation.” The investigations of others however, render it very probable that the deposit does sometimes take place without any antecedent inflammatory action.

Its Effects after being Deposited.—Whether its deposition is preceded by inflammation or not there is no doubt that when deposited it acts as a foreign, irritating body, and either causes the commencement of inflammatory action, or increases such action if previously existing. The local affection thus established may be so great as to increase materially the constitutional disorder in the form of general irritability, hectic fever, etc. This is especially apt to be the case where extensive deposits are passing through the process of softening. The irritation established in one gland is also likely to be propagated in adjacent glands, and especially in those lying in the direction of the lymphatic current, and this causes deposits to occur in them.

Character of the Deposit.—The physical and perhaps also the chemical properties of scrofulous matter depend in some measure on the changes it may have undergone after the deposit occurred, and this is perhaps a sufficient explanation of the somewhat variant descriptions given of it by different observers. Scrofulous tubercular matter does not however seem to differ, in any essential particular, from the deposit which occurs in tuberculous phthisis. No further differences have been discovered between matter obtained from scrofulous disease of the lymphatic glands and that found in the lungs in phthisis, than would naturally result from the difference of the structures in which the deposit occurred, or the different

stages at which the specimens were obtained. A sufficient description of tubercular matter was given in a former lecture (see Vol. I., page 167, et seq.). The principles then enunciated are deemed to comprise a sufficient exposition of the nature of these aplastic deposits, and also of the changes they undergo and the source from which they are derived. I will only add that some writers deny the existence of specific tubercle-corpuscles. Dr. Addison regards tubercular matter as resulting from a retrograde metamorphosis of tissues, and says "I have repeatedly examined with the microscope the material deposited in the air-cells of the lungs in *pneumonia*, and compared its characteristics and appearance with that forming a tubercle, without seeing any more essential difference between them than exists between purulent matter recently secreted, and that of an old chronic abscess."

Cause of the Deposit.—This must be referred to two circumstances combined. First, a morbid state of the blood, i. e., the presence in that fluid of aplastic albuminous matter; and secondly, the debility of the capillaries of the part in which the deposit occurs. It is probable that such a state of the blood is irritating to the capillaries generally, and especially to those more immediately concerned in elaboration of the blood-plasma, as the absorbent glands; and in those specially engaged in depuration and oxygenation of the blood, namely the lungs. And as elaboration is the predominating function during the period of growth, and depuration becomes so in adult life, these considerations taken in connection with the difference of external circumstances attendant upon these two periods of life, appear to me to afford a sufficient explanation of the frequency of scrofula in childhood and of phthisis in adult life, and *vice versa*, without resorting to the hypothesis that the two diseases depend upon essentially different states of the constitution.

Its Relation to Pulmonary Tubercle.—Considerable discussion has occurred among medical writers in regard to the relation of scrofula and tubercular phthisis; some regarding them as the same disease manifesting itself in different localities; others contending for an essential difference in the nature of the two affections.

I have not the least doubt of their identity, so far as regards their proximate elements. The same morbid state of the system precedes both diseases, and the product when deposited appears to be the same in appearance to the naked eye, under the microscope, and when analyzed by the chemist. When scrofula proves fatal,

tubercles are often found in the lungs; and when patients die of tubercular phthisis, tubercles are often found in the lymphatic glands. True scrofula and tubercular phthisis appear to be in one sense antagonistic, that is, active local disease does not occur in the lymphatic glands and in the lungs at the same time. This I regard as evidence of their pathological identity. "*Ubi irritatio ibi fluxus.*" The irritation being seated in one part acts as a revulsive to the same form of disease in the other.

Sydenham called consumption "pulmonary scrofula" and with some reason, yet notwithstanding their close affinity, I think they should be designated by different names. Dr. Phillips who contends for a marked difference between them, acknowledges that "they may belong to the same family, as do pleurisy and pneumonia." If we regard the last mentioned diseases as *inflammation* occurring in different parts, why may we not consider scrofula and tubercular phthisis as *tuberculosis* manifested in different structures? And why not retain a distinct name for each in the latter case as well as in the former.

SCROFULOUS CACHEXY.

Symptoms.—Very often before any local disease is manifested in the lymphatic glands, scrofula manifests itself in serious constitutional disturbance.

The symptoms of constitutional disorder often preceding and always present in the early stages of the glandular affections, may be briefly enumerated as follows: Paleness and puffiness of the face; tumefaction of the lips and nostrils, with a tendency to chapping and excoriation in cold weather; an irritable condition of the conjunctivæ; tendency to irritation or inflammation of the ears; vesicular eruptions on the skin; enlarged tonsils, easily excited to inflammation on slight exposure; an irritable condition of the mucous membranes of the air-passages, alimentary canal, and urinary organs; a feeble pulse, easily excited by muscular efforts; flabbiness of the muscles; fatigue after slight exercise, indicating general weakness; occasional, slight, febrile symptoms.

Inflammation accidentally produced is slow and apt to become chronic, or to result in indolent, or intractable ulcers. Ophthalmia, white swelling, rickets, inflammation of the bones resulting in exfoliation or necrosis, and numerous other affections of different parts of the body frequently occur in scrofulous cachexy, and such affections occurring in this state of the system are almost universally recognized by the profession as *scrofulous*, although they

may not be associated with tumefaction of the lymphatic glands. Generally however the glands are enlarged when the cachexy is well marked.

Some writers enumerate most of the symptoms I have mentioned as signs of predisposition to scrofula, but they are symptoms of positive disease which unless arrested will result in tuberculous deposits either in the lymphatic glands or elsewhere as the age and habits of the patient or other influencing circumstances may determine.

Exciting Causes.—These constitute a group of circumstances, which may not all be connected with any one case; some of which indeed can never occur together, being induced by diametrically opposite influences—yet all tending to a similar result, namely, embarrassment of the nutrient functions of the body. Whatever tends to debilitate the digestive organs, to prevent perfect elaboration of blood-plasma, to hinder its metamorphosis in the tissues, or to retard elimination of unwholesome materials from the body, may be referred to as exciting causes of scrofulous cachexy.

The over-feeding, pampering and effeminacy of the rich, and the half-starved, filthy and exposed condition of the poor, both evidently tend to the impairment of the nutrient powers and to vitiation of the blood, which I conceive to be the point of departure from health in the direction of scrofula. In support of this view, which I do not claim as in any sense original, permit me to make the following quotation from the late Dr. Todd of Great Britain. Speaking of “strumous dyspepsia” he says:

“Upon whatever temperament the disordered habit, which we call scrofula, may engraft itself, we venture to say that this form of dyspepsia will also there be found. In the offspring of scrofulous and also of dyspeptic, hypochondriacal, or cachectic parents, in the children of old men, in children who have been badly nursed, or who, brought up by hand, have been improperly fed, or reared in the impure air of crowded towns, symptoms of disorder of the function of digestion early manifest themselves, generally between the first and tenth years, often commencing with the first dentition, which is commonly painful and difficult.”

Dr. Todd's description of the symptoms of this form of dyspepsia is so truthful that I will quote the remainder of the paragraph: “Though the child from time to time loses its appetite, it is generally morbidly craving or ravenous, even soon after a plentiful meal requiring fresh food, so that the nurse remarks, ‘there is no satisfying such children!’”

"The complexion loses its color, the skin its tone, ceasing to compress the flesh; the flesh becomes soft and flabby, the appearance is languid, the belly is generally tumid, and there is a want of the usual disposition to play or to use the exercise common to that period of life. The little patient is soon tired, complains of aching of the legs and knees, desires frequently to be taken up, his temper is fretful, he is easily set to crying, and his intellect is either precocious, or unusually dull. His sleep is seldom calm and composed; he moans, talks, or grinds his teeth, sometimes screams and raves. His bowels are generally confined, and his evacuations are of a light grey color, like pale brown paper, sometimes curdled with streaks of mucus; or they are of a greenish color, frequently yeasty, of a sour and highly offensive smell and very often the food is passed unchanged. Diarrhea occasionally occurs, consisting usually of light-colored or slimy stools, and the patient frequently complains of pain in the bowels or uneasiness of the stomach. The urine often deposits a whitish sediment, the breath is fetid or heated; there is some slight thirst, slight heat of the skin, except on the extremities, which are colder than natural; the skin is harsh and dry, except during sleep, when there are frequently heavy but partial sweats. The tongue is redder than natural, and on its anterior part spotted with small points of a darker and brighter red color than the general surface; it is seldom much furred, being either covered with a thin mucous fur through which the red spots appear, or with a slimy, brownish coat, or the fur is distributed in small circular white, more or less confluent patches, presenting altogether a dappled appearance. When irritation of the stomach supervenes, the tongue is dry and of a brownish red color."

Predisposing Causes.—It can not be denied that thousands of the human family are exposed to the causes just mentioned (which do not essentially differ from the causes of general anæmia) without becoming scrofulous. Digestion may become disordered, and nutrition may greatly fail, causing emaciation, feebleness, and constant nervous irritability, and yet no tubercular deposits occur in the system. If anæmia be produced and exist for a long time without inducing tuberculous disease, as all must admit, then we must look beyond the exciting causes of that condition for something that will explain why in certain cases such a deterioration of the fluids and tissues is attended by tubercular deposits and degeneration. This, it is believed, exists in a peculiar quality of the constitution, usually expressed by the term *predisposition*.

What constitutes the essential characters of this predisposition, it is impossible as yet to determine. It is not necessarily a morbid state, for it may exist under favorable circumstances without any symptoms of disease. I have not time to elaborate the views I have adopted, but will categorically state them. I believe it to consist in some peculiar quality of the constituents of the body, in consequence of which nutrition and the functions upon which it depends, are liable under disturbing influences, to fail in a particular way, of fully accomplishing their duties. Nutrition does not result in the production of firm and permanent tissues, and assimilation is partial, stopping short of perfect products; then follow, if the predisposition is strong, the morbid symptoms of scrofulous cachexy.

The *symptoms* of such a quality of the body have been sought for by all observers, but nothing reliable has been determined in this respect. A tree may appear green and thrifty and the fruit when it first appears may look plump and vigorous; yet every year at a particular period, the growth of the fruit ceases and it is cast before coming to maturity. There is some peculiar property or fault in the tree that we can not detect except by its results. So it is with the human body, when predisposed to become scrofulous. This state of the system is said by some writers to be denoted by observable peculiarities, as "a dull white, exquisitely delicate skin; a rounded, graceful, and not strongly marked face; an extreme development of cellular tissue by which the muscular markings are effaced, and by which a roundness is given to the limbs which may be mistaken for strength; a fullness of the face, a delicacy of feature, and a rosy color uniformly spread over the cheeks, which contrasts agreeably with the surrounding palor; light colored or auburn hair; large, blue, projecting and humid eyes, with the pupils habitually dilated; large head; long rounded neck; very white and brittle teeth; etc., etc."

It is probable that the external appearances are more common in persons predisposed to scrofula than others, and it is true that a majority of scrofulous patients exhibit some of the traits named; but the relation is by no means constant between these external signs and the predisposition. Negroes are more disposed to scrofula than whites, and they certainly do not exhibit to the eye the characteristics named.

The state of system constituting a strumous predisposition is, I at have no doubt, in a majority of cases congenital, that is, present

birth ; and may be so strong as to insure the occurrence of scrofula under very slight exciting causes.

The *cause of hereditary* predisposition has been referred to tuberculous, and also to syphilitic disease in the parents, one or both, or in the ancestors of either ; to extreme youth or old age of parents ; to great disparity in the ages of parents ; to excessive venery or masturbation in either of the parents ; to frequent inter-marriages among near relatives, etc.

The causes that are believed to produce the predisposition after birth are those to which I have already briefly referred as exciting causes. These certainly tend to increase the predisposition when inherited, and when operating under peculiar circumstances may originate it. There are some circumstances that have been strongly insisted on as predisposing causes, as the milk of a scrofulous nurse, or of a diseased cow ; the milk of a menstruating nurse ; pus from other diseases, as variola, vaccina, etc., introduced by inoculation or received with the milk, defective quality and deficient quantity of food, as poor milk, exclusive vegetable diet, restriction to potatoes as the principal food, etc. ; contaminated and damp atmosphere ; close confinement, especially in the dark, etc.

Nature of Scrofulous Disease.—I have thus endeavored to give a brief resume of what I deem the most reliable facts and principles connected with scrofula, commencing with the local disease and tracing the line of morbid phenomena to their etiological origin, so far as that has been ascertained.

The legitimate deduction to be drawn from all the facts in the case appears to me to be, that scrofula is the result of a peculiar vice of the constitution, in which the blood is deficient in globules and loaded with imperfectly elaborated albuminous and fibrinous matters of such character, that they can neither be vitalized nor oxidized, and therefore can neither be appropriated in the formation of tissues, nor eliminated by the secreting organs. That in this state they embarrass the functions, irritate the system, and are finally deposited in the form of tubercular matter. That if the system reach this condition in childhood, when the elaborating functions are especially taxed, scrofulous disease of the lymphatic glands is apt to be produced ; but if adult life has been attained, the deposit is most likely to occur in the lungs, in the form of tubercular phthisis.

TREATMENT.

1. *For the Local Affection.*—Where the gland is inflamed as manifested by redness, heat, and pain, moderate leeching, and the application of cold should be employed. If the tumor is merely hard and is movable, a wash of muriate of ammonia may be applied every morning, and one of compound tincture of iodine diluted so as not to excoriate, every evening, or the latter twice a day alone.

If the gland is fixed and fluctuates, and the structures over the abscess are thick, a lancet should be inserted to prevent destruction of the skin and areolar tissue by ulceration; if ulceration has already progressed so far as to render the integument unhealthy and thin, caustic should be applied for its removal, as a better cicatrix will be formed after cauterization than after scrofulous ulceration. A solution of carbonate of potassa should be injected into the ulcer daily for a time, followed by injections of a solution of sulphate of zinc, say from five to ten grains to a fluid-ounce of water.

Care should be taken to protect the ulcer from flies. I have seen a scrofulous ulcer filled with maggots.

2. *For the Constitutional Disease.*—This must be medicinal, dietetic, and hygienic.

The bowels, liver and skin, must be brought into and kept in regular action by such measures as seem to be from time to time required. Digestion must be promoted by such stomachic and tonic medicines as are found to be borne; wine, ale, vegetable bitters, iron, and cod-liver oil have all been highly recommended and are to be employed as one or another seems best adapted to the case.

As a remedy combining the powers of promoting solution, absorption, and elimination of bad deposits, we have perhaps no agent equal to the iodide of potassium. This should be taken three times a day in doses of from one to five grains according to the age of the patient. It may be given in simple or some alterative sirup. According to Dr. Wilshire (*Med. Times*, 1847), it should not be sweetened except at the time it is taken, for decomposition soon takes place after it is mixed with sirup. The practice with many is to add the iodide to the compound sirup of stillingia, or the compound sirup of sarsaparilla, so that a teaspoonful of the mixture forms a dose. I prefer dissolving the salt in so much distilled

water that a teaspoonful shall contain a dose, and then add a teaspoonful of the sirup to each dose at the time of giving it.

The medicine given in this way will generally be borne for several weeks if required, without intermission, though I generally deem it best to suspend for a week or two after it has been taken regularly for about three weeks.

I have used the compound tincture of iodine in two or three cases, and continued it about three weeks without intermission, with marked benefit. It was given three times a day in sirup, commencing with five drops for a patient ten years old, and gradually increasing the dose to twenty.

The chloride of barium has been somewhat lauded as a remedy in scrofula. I have made some use of it but am not able to speak of its value.

Scores of agents have from time to time been brought forward as remedies for scrofula, but have since been rejected as worthless or injurious.

Even mercury was for a long time regarded as little less than a specific, and is still used by many practitioners; but the best informed of those who use the article in other diseases are so well convinced of its deleterious effects on the scrofulous constitution that they will not prescribe it even for syphilis, where the patient is of the strumous habit.

This fact in medical history should cause us to look with charity on such illusions as lead the populace to place confidence in adder's flesh, drinking out of a dead man's skull, the touch of a dead felon's hand, toad powder, amulets, and the royal touch, to cure them of king's evil.

The dietetic and hygienic advice for patients in scrofula does not differ materially from those I shall mention under the following head.

Prevention of Scrofula.—Where there is any reason to suspect the presence of a scrofulous predisposition, a course should be adopted to prevent the disease from being induced. Unless positively morbid symptoms have already appeared there is no necessity of resorting to drugs, and if such symptoms are present the remedies already mentioned are to be judiciously prescribed as required.

The plan to be pursued in the management of children predisposed to scrofula is the very one which should be adopted with all children. The chief advice to be given is to avoid all errors of

diet, and all locations and habits that are not in strict accordance with nature and good sense. But it is best perhaps to particularize somewhat in regard to the most important matters.

1. The child should from the beginning have food of good quality and of proper quantity. I believe the best food for an infant is the milk from its mother's breast, provided that mother is healthy. If this can not be, then a healthy wet-nurse, whose own child was born about the same time with the one to be nursed, should if practicable be secured.

If the child must be raised "by hand," milk recently taken from one healthy cow should be used; it should not be jolted in a dairyman's wagon for an hour or two before it is obtained. If the infant is very young the milk should be somewhat diluted, sweetened a little, and a little sweet cream or fresh butter should be added. This will make it nearer like the milk from a woman's breast, which contains less cheese, but more sugar and butter than cow's milk. The milk should be taken by the child through an artificial nipple requiring about the same effort as sucking from the breast. This causes saliva to be secreted; and will also prevent the child from over-loading its stomach.

Older children should not be too soon restricted to regular meals; but should have good bread, butter and milk, and finally meat in moderate quantities, say once a day. Ripe fruit should not by any means be denied to children, though moderation in this and every other species of diet should be enforced.

If the predisposition is strong the food should be modified according to circumstances. An irritable state of the system may require diminution of the proportion of animal food; a cold, lymphatic state requires it to be increased; but in no case are soups and sloppy food commendable forms for diet and especially for children with scrofulous tendency. Their food should be well prepared and pleasant to the taste and about the same one day with another. They should not be allowed, much less tempted by sweetmeats, pastries and savory dishes, to over-gorge themselves.

The *hygienic* management of children is a matter of much importance. Here, as in diet, error lies in two opposite directions,—in negligence on the one hand and excessive attention on the other. It is perhaps worse for a child to be too carefully nursed, than to be abandoned to run half naked on the commons, to wallow in filth, and wade in every puddle. A medium course is the right one.

The child predisposed to scrofula should be kept clean in person, have his clothes frequently changed and neither very heavy nor very light but adapted to the season, be encouraged to exercise in the open air in all kinds of weather except stormy, have cheerful playmates, and not put to close study. If practicable he should have a dry, airy place of abode, sleep in a room without fire, on a mattress instead of feathers, keep regular hours, and enjoy frequent excursions and change of air and scenery.

Children managed in the way I have briefly described, though strongly predisposed to, will often escape scrofulous disease, and if they should be attacked, the gravity of the disease will most surely be greatly mitigated. The same or an equivalent course should be pursued throughout the medical treatment, for let it be constantly borne in mind, that no medication can cure scrofula that is not associated with proper means to invigorate and build up the entire body.

INDEX

TO

VOLUMES I. AND II.

	PAGE		PAGE
Abdominal Dropsy (see Ascites).....	ii. 555	Angina Trachealis.....	ii. 38
Active congestion.....	i. 118	Ani, prolapsus.....	i. 691
Æsculapius deified.....	i. 24	Antidyspeptic pill.....	i. 722
Ague and fever.....	i. 275	Aplastic deposits.....	i. 164
Ague, anticipating.....	i. 276	Apoplexy.....	ii. 699
Agre cake.....	i. 283, 289	anatomical characteristics.....	ii. 703
Albumen, in the blood.....	i. 59	causes.....	ii. 705
Albuminuria.....	ii. 372	diagnosis.....	ii. 706
causes.....	ii. 379	prognosis.....	ii. 707
nature.....	ii. 374	symptoms.....	ii. 700
post-mortem.....	ii. 378	treatment.....	ii. 707
prognosis.....	ii. 380	Aphthæ.....	i. 565
symptoms.....	ii. 376	Aran M., on hemoptysis.....	ii. 507
treatment.....	ii. 380	Armstrong on typhus.....	i. 359
Allison's definition of disease.....	i. 42	Arnott on colloid.....	i. 179
American Eclecticism.....	i. 34	Art of medicine.....	i. 40
Amygdalitis.....	i. 577	Ascaris Lumbricoides.....	i. 778
Anasarca.....	ii. 562	Ascaris Vermicularis.....	i. 779
causes, diagnosis.....	ii. 564	Ascites.....	ii. 555
symptoms.....	ii. 562	causes, diagnosis.....	ii. 557
treatment.....	ii. 565	dissection.....	ii. 556
Anæmia, general.....	i. 108	prognosis.....	ii. 558
Anæmia, puerperal.....	ii. 436	symptoms.....	ii. 555
Anæmia or Chlorosis.....	ii. 434	treatment.....	ii. 559
causes.....	ii. 438	Asclepiadæ.....	i. 25
prognosis.....	ii. 442	Asiatic cholera.....	i. 730
recipes for.....	ii. 443, 446-7	Aspedium filix mas, for worms.....	i. 791
symptoms.....	ii. 436	Asphyxia.....	ii. 418
treatment.....	ii. 442	from drowning.....	ii. 418
Anal Fistula.....	i. 685	treatment.....	ii. 419
Angina.....	i. 572	from strangulation.....	ii. 420
Angina Pectoris.....	ii. 428	treatment.....	ii. 422
causes, diagnosis.....	ii. 430	from extreme cold.....	ii. 423
prognosis.....	ii. 431	treatment.....	ii. 423
symptoms.....	ii. 428	Asphyxia, Cartwright, Dr., on.....	ii. 426
treatment.....	ii. 431	Dr. Marshall Hall's method in.....	ii. 426

	PAGE		PAGE
Asthenic Plethora.....	i. 114	Bladder, chronic inflammation of—	
Asthma	ii. 145	treatment	ii. 368
causes, post-mortem.....	ii. 149	Bleeding in angina.....	i. 575
physical signs.....	ii. 148	Blood, composition of.....	i. 57
prognosis	ii. 151	Blood, determination of.....	i. 118
symptoms.....	ii. 147	to the brain	i. 124
treatment	ii. 151	Blood, in cholera.....	i. 741
Assyria, early history of medicine in	i. 24	Blood, in yellow-fever.....	i. 398
Atrophy	i. 140	Blood-letting, effects of.....	i. 510
Atrophia Mesenterica.....	i. 144	remarks concerning.....	i. 56
Auscultation	ii. 74	Blood, Carpenter on.....	i. 55
bronchial sound.....	ii. 75	Blood, Magendie on.....	ii. 109
friction sound	ii. 81	Blood, Wharton Jones on.....	i. 54
pectoriloquy	ii. 81	Boerhaave's Reform.....	i. 27
rales	ii. 77	Bostock, quotations from.....	i. 28
vesicular murmur.....	ii. 75	Bost. M. & S. Jour., quotations from	ii. 397
vocal resonance.....	ii. 78	Boussingault, M.'s, discovery.....	i. 270
Autopsy, general remarks on.....	i. 49	Bowels, hemorrhage of the.....	ii. 518
		anatomical developments.....	ii. 520
Bailey on periodicity.....	i. 285	causes, diagnosis	ii. 521
Bell on congestive fever.....	i. 385	treatment	ii. 522
on Fowler's solution.....	i. 301	Bowels, inflammation of the.....	i. 617
on intermittent fever.....	i. 301, 303	acute	i. 618
Bengal fever.....	i. 318	chronic	i. 626
Biliary calculi	ii. 287	Bowels, obstruction of the.....	i. 710
effect of.....	ii. 289	Bowman's Med. Chem., tables from	i. 57, 58
forms of.....	ii. 288	Brain, inflammation of the.....	i. 539
how developed.....	ii. 289	Brain, passive congestion of the.....	i. 134
recipes for	ii. 291-2	Bright's Disease.....	ii. 372
treatment	ii. 290	causes.....	ii. 379
Bilious colic.....	i. 697	nature of.....	ii. 374
Bilious fever.....	i. 318	post-mortem	ii. 378
Black vomit, description of.....	i. 397	prognosis	ii. 380
Blackall, Dr., on Mercury.....	ii. 325	symptoms.....	ii. 376
Bladder, hemorrhage from.....	ii. 524	treatment	ii. 380
causes.....	ii. 526	Bronchitis, acute.....	ii. 84
diagnosis	ii. 525	anatomical developments.....	ii. 88
pathology	ii. 527	causes	ii. 88
symptoms	ii. 524	symptoms	ii. 84
treatment	ii. 527	treatment	ii. 89
Bladder, inflammation of.....	ii. 362	Bronchitis, chronic.....	ii. 95
acute	ii. 362	diagnosis, prognosis.....	ii. 97
causes, diagnosis	ii. 364	recipe for	ii. 101
post-mortem, prognosis.....	ii. 364	remarkable case of.....	ii. 96
symptoms	ii. 362	treatment	ii. 98
treatment	ii. 365	Bronchial Sound.....	ii. 75
chronic	ii. 366	Broussais' theory of fever.....	i. 266
causes, post-mortem	ii. 368	Buchanan, Dr. J. R., on diabetes ..	ii. 392
prognosis	ii. 367	quotations from. i.	32
symptoms	ii. 366	Bullæ.....	ii. 574

	PAGE		PAGE
Burrows, Dr.....	i 124	Consumption, Pulmonary.....	ii. 156
Cachexy, scrofulous.....	ii. 784	causes	ii. 185
Cacoplastic deposits.....	i. 161	diagnosis	ii. 188
Cake, ague.....	i. 283	predisposition to	ii. 158
Camp fever.....	ii. 683	prognosis	ii. 189
Cancer or carcinoma.....	i. 177	recipes for.....	ii. 203-4, 216, 218, 222
Cancer of the rectum.....	i. 669	symptoms, general.....	ii. 162
Cancrum oris.....	i. 565	“ physical.....	ii. 176
Canker	i. 565	treatment	ii. 192
Carditis	ii. 223	dietary	ii. 199
Carlisle, Dr., on Mercury.....	ii. 333, 335	by inhalation.....	ii. 220
Cartwright, Dr., on asphyxia.....	ii. 426	medicinal	ii. 201
Carpenter, Dr., on the blood.....	i. 56	tuberculous matter in.....	ii. 176
on tonicity.....	i. 74	morbid anatomy of.....	ii. 178
on excito-motor disease... i.	92	crude tubercle	ii. 179
Chapman's Nosology	i. 35	granulation.....	ii. 178
Charleston, yellow fever at.....	i. 390	softening of tubercle..	ii. 181
Chicken pox.....	ii. 665	state of the lung-structure ii.	182
causes	ii. 666	tuberculous infiltration.....	ii. 180
diagnosis.	ii. 667	Contagion, general remarks on.....	ii. 603
symptoms	ii. 665	Contagion of typhoid.....	i. 445
treatment	ii. 667	Contagious typhus.....	ii. 683
Chills and fever.....	i. 275	Continued fever.....	i. 429
Chloride of zinc in cancer.....	i. 189	Controversies in medicine.....	i. 27
Chlorosis	ii. 435	Costiveness	i. 716
Cholera epidemic.....	i. 730	Cow pox.....	ii. 625
Cholera morbus.....	i. 723	Crawcour, Dr., on use of glycerine... i.	154
Chomel, on typhoid.....	i. 454	Crisis in fever.....	i. 265
on use of chloride of soda... i.	456	Croup.....	ii. 38
Chronic dysentery.....	i. 646	anatomical relations.....	ii. 49
Cicatrices	i. 159	causes	ii. 57
Clark, Dr., on consumption.....	ii.	diagnosis	ii. 48
156, 160, 166, 176		Meigs, Dr., on.	ii. 48, 50-1
Classification of diseases.....	i. 35, 51	prognosis	ii. 58
Clinical case of fever.....	i. 663	treatment	ii. 59
Cod-liver oil, in struct. degeneration i.	155	Croup, inflammatory.....	ii. 42
Cœlelmintha	i. 194	treatment	ii. 61
Coleman, Dr., on milk sickness.....	i. 773	Croup, pseudo-membranous.....	ii. 44
Colic, varieties of.....	i. 695	cases of.....	ii. 45-6
bilious	i. 697	treatment	ii. 65
lead or painter's.....	i. 702	Croup, spasmodic.....	ii. 40
spasmodic or wind.....	i. 695	treatment	ii. 59
Colitis.....	i. 631	Cullen's nosology.....	i. 35
Congestion, active.....	i. 118	Cullen, on periodicity.....	i. 285
hypostatic	i. 130	Cutaneous Diseases.....	ii. 567
passive.....	i. 129	exanthemata	ii. 581
Congestive fever	i. 358	erysipelas	ii. 587
Congestive intermittent.....	i. 287	anatomical character	ii. 590
Constipation	i. 716	causes.....	ii. 590
		diagnosis, prognosis.....	ii. 592

	PAGE		PAGE
Cutaneous diseases, erysipelas—		Delirium tremens—	
symptoms.....ii.	587	diagnosis.....ii.	730
treatment.....ii.	593	Gerhard, Dr., on.....ii.	739
erythema.....ii.	581	prognosis.....ii.	731
treatment.....ii.	582	recipcs for.....ii.	745
urticaria.....ii.	584	stages and symptoms.....ii.	727
causes, diagnosis.....ii.	585	first stage.....ii.	727
treatment.....ii.	586	second stage.....ii.	728
pustulæ.....ii.	576	third stage.....ii.	730
impetigo.....ii.	577	treatment.....ii.	731
treatment.....ii.	578	Deposits in or upon tissues.....i.	158
porrigo.....ii.	578	Desruelles, M., on mercury.....ii.	311
treatment.....ii.	579	Determination of blood.....i.	118
scaly.....ii.	597	Diabetes insipidus.....ii.	384
lepra.....ii.	601	Diabetes mellitus.....ii.	388
causes, treatment.....ii.	602	causes.....ii.	394
psoriasis.....ii.	597	Dr. J. R. Buchanan on.....ii.	392
causes, treatment.....ii.	599	Dr. Tweedie on.....ii.	390
vesicular.....ii.	568	prognosis.....ii.	395
bullæ.....ii.	574	treatment.....ii.	395
pemphigus.....ii.	575	Dr. Hall on.....ii.	398
rupia.....ii.	576	Diagnosis.....i.	248
eczema.....ii.	570	Diagnosis, physical.....ii.	71
causes, treatment.....ii.	571	auscultation.....ii.	74
herpes.....ii.	568	bronchial sound.....ii.	75
causes, treatment.....ii.	569	friction sound.....ii.	81
scabies.....ii.	572	pectoriloquy.....ii.	81
cause.....ii.	573	rales.....ii.	77
treatment.....ii.	574	vesicular murmur.....ii.	75
Cynanche parotidæa.....ii.	668	vocal resonance.....ii.	78
Cynanche tonsillaris.....i.	576	percussion.....ii.	78
Cynanche trachealis.....ii.	38	Diarrhea.....i.	628
Cystitis, acute.....ii.	362	Dickson, Dr. S. H., on yellow fever... i.	390, 406, 409
causes, diagnosis.....ii.	364	Digestion, process of.....i.	602
post-mortem, prognosis.....ii.	364	Disease, definition of.....i.	42
symptoms.....ii.	362	classification of.....i.	51
treatment.....ii.	365	investigation of.....i.	36
Cystitis, chronic.....ii.	366	general distinctions of.....i.	36
causes, post-mortem.....ii.	368	proximate elements of.....i.	107
prognosis.....ii.	367	signs and symptoms of.....i.	239
symptoms.....ii.	366	Diseased irritability.....i.	70
treatment.....ii.	368	Disease of fluids.....i.	51
Cystirrhæa, or catarrh of the bladder ii.	366	Disease of the nervous functions.....i.	77
Debility.....i.	204	Disease of reflex nervous influence... i.	87
Deferring ague.....i.	276	Disease of secretion.....i.	97
Degeneration of tissues.....i.	149	Disease of the solids.....i.	63
Delirium tremens.....ii.	726	Disease of tonicicy.....i.	74
anatomical phenomena.....ii.	731	Diseases of the rectum.....i.	664
complications.....ii.	730	Diseases of nutrition.....i.	135

	PAGE		PAGE
Diuresis	ii. 384	Enteric fever.....	i. 430
treatment	ii. 386	Enteritis.....	i. 617
Dixon, Dr., on Mercury.....	ii. 304	Entozoa.....	i. 192
Dogmatists.....	i. 26	Epidemic cholera.....	i. 730
Dothin-enteritis.....	i. 430	Epilepsy	ii. 711
Dropsy	ii. 529	anatomical developments.....	ii. 715
abdominal	ii. 555	causes.....	ii. 716
causes, diagnosis.....	ii. 557	diagnosis	ii. 718
dissection	ii. 556	influence	ii. 715
prognosis	ii. 558	prognosis	ii. 718
symptoms.....	ii. 555	recipe for.....	ii. 721
treatment	ii. 559	symptoms	ii. 711
fibrinous	ii. 535	treatment	ii. 719
chemical composition.....	ii. 536	Epistaxis.....	ii. 481
serous.....	ii. 530	treatment	ii. 483
condition of the blood in.....	ii. 531	Erratic ague	i. 277
Dr. Tweedie on.....	ii. 533	Erysipelas	ii. 587
origin of the fluid.....	ii. 531	anatomical character	ii. 590
general causes of dropsy.....	ii. 539	causes	ii. 590
" prognosis	ii. 540	diagnosis, prognosis.....	ii. 592
" recipe for.....	ii. 543	symptoms.....	ii. 587
" symptoms	ii. 537	treatment	ii. 593
" treatment.....	ii. 541	Erythema.....	ii. 581
Dropsy, ovarian.....	ii. 561	treatment	ii. 582
Dropsy of the chest	ii. 547	Etiology, or causes of disease.....	i. 196
anatomical phenomena.....	ii. 550	Euplastic deposits.....	i. 159
causes	ii. 551	Excessive secretions	i. 98
recipe for	ii. 553	Excito-motory and excito-secretory	
symptoms	ii. 547	nerves.....	i. 87
treatment	ii. 551	Excito-motor power, increase of.....	i. 92
Dropsy of the heart	ii. 553	Eye, disease of a case.....	i. 559
Duodenitis	i. 617	Fainting.....	ii. 413
Dysentery, acute.....	i. 631	Falling sickness.....	ii. 711
Dysentery, chronic.....	i. 646	treatment	ii. 719
Dyspepsia	i. 602	Father of medicine, the.....	i. 25
Eclectic medicine, its claims.....	i. 31	Fauces, inflammation of.....	i. 572
Eczema	ii. 570	Favus	ii. 578
causes, treatment.....	ii. 571	Fever in general.....	i. 257
Egyptian priests.....	i. 23	Fever and ague.....	i. 275
Elements of the blood.....	i. 57	Fever, congestive	i. 358
Emphysema of the lungs.....	ii. 140	Fever, follicular.....	i. 429
causes.....	ii. 143	Fever, intermittent.....	i. 275
morbid appearances	ii. 142	Fever, pernicious	i. 375
physical signs	ii. 141	Fever, remittent or bilious.....	i. 318
prognosis	ii. 144	Fever, symptomatic and idiopathic... i. 266	
symptoms	ii. 140	Fever, typhoid or continued.....	i. 429
treatment	ii. 144	Fever, typhus.....	ii. 683
Empirics	i. 26	Fever, yellow	i. 388
Endocarditis	ii. 223, 237	Fever, stages of.....	i. 258

	PAGE		PAGE
Fibrin.....	i. 57	Heart, inflammation of, phys. sympts.—	
Fissure of the rectum	i. 682	palpation	ii. 231
Fistula in ano	i. 685	percussion.....	ii. 235
Fluids, disease of the.....	i. 51	recipe for.....	ii. 246
Flux	i. 631	treatment	ii. 243
Friction sound.....	ii. 81	Heart, nervous affections of.....	ii. 260
Functional disease.....	i. 68	palpitation	ii. 261
Fungus hæmatodes.....	i. 178	causes, diagnosis.....	ii. 263
		treatment	ii. 266
Gall-stones.....	ii. 287	Hematuræ.....	ii. 524
effects produced by	ii. 289	causes.....	ii. 526
form of.....	ii. 288	diagnosis.....	ii. 525
recipes for	ii. 291, 292	pathology	ii. 527
treatment.....	ii. 290	symptoms.....	ii. 524
Gastritis, acute	i. 586	treatment	ii. 527
chronic.....	i. 596	Hemorrhage.....	ii. 467
Gastro-intestinal irritation	i. 349	causes.....	ii. 476
Gelsemium sempervirens.....	i. 299	divisions.....	ii. 469
Gendrin on the blood	i. 491, 501	active	ii. 474
General pathology.....	i. 39	constitutional	ii. 469
Gerhard, Dr., on Delirium Tremens.....	ii. 739	critical	ii. 470
Gibson, Dr.....	i. 680	passive.....	ii. 474
Glandular atrophy.....	i. 144	periodical	ii. 470
Glechoma-nepeta, use of in colic	i. 708	vicarious	ii. 470
Glossitis.....	i. 570	treatment	ii. 476
Glover, Dr., analysis of tubercular		Hemorrhage in typhoid	i. 436
matter by.....	i. 168	Hemorrhage from mouth.....	ii. 486
Glycerine.....	i. 154	treatment	ii. 487
Good's nosology	i. 35	Hemorrhage from nose.....	i. 481
Greece, medicine in ancient.....	i. 24	treatment	ii. 483
Green sickness.....	ii. 435	Hemorrhage of bowels.....	ii. 518
Green, Dr. H.....	ii. 32	treatment	ii. 522
		Hemorrhage, uterine	ii. 510
Hale, Dr.....	i. 430	treatment	ii. 514
Hall, Dr. Marshall, on excito-secre-		Hematemesis	ii. 487
tory nerves.....	i. 88	causes, diagnosis.....	ii. 490
Hall, Dr. Marshall's ready method		treatment.....	ii. 492
in asphyxia.....	ii. 426	Hemoptysis.....	ii. 495
Hamilton, Dr., on mercury.....	ii. 330	Aran, M., on.....	ii. 507
Harley, Dr.....	i. 53	causes	ii. 499
Haviland, Dr., on chloride of zinc....	i. 189	post-mortem.....	ii. 502
Haynes, Dr., on milk sickness.....	i. 770	prognosis	ii. 501
Hays, Dr. Isaac, on mercury.....	ii. 307	symptoms.....	ii. 496
Hæmastasis	i. 132, 537	treatment	ii. 502
Heart, dilation of.....	ii. 248	Hemorrhoids	i. 671
Heart, inflammation of.....	ii. 223	Hepatitis	ii. 269
anatomical relations	ii. 238	acute.....	ii. 270
general symptoms	ii. 224	anatomical phenomena.....	ii. 272
physical symptoms.....	ii. 226	associated with periodical	
auscultation.....	ii. 228	fever.....	ii. 270, 272

	PAGE		PAGE
Hepatitis, acute—		Hydrophobia—	
causes	ii. 274	cases, treatment.....	ii. 777
course and duration	ii. 272		
diet in.....	ii. 281	Idiopathic fever.....	i. 266
prognosis, treatment	ii. 277	Ilietis, ileo-colitis	i. 618
Hepatic disease, chronic.....	ii. 282	Ileus	i. 710
anatomical phenomena.....	ii. 284	Impetigo	ii. 577
diagnosis, prognosis.....	ii. 283	treatment.....	ii. 588
treatment	ii. 284	Indian hachy, as a cause of milk	
Hepatic disorder in remittent fever... i.	351	sickness	i. 776
Hemorrhœa petechialis.....	ii. 461	Indigestion	i. 602
Herpes.....	ii. 568	Induration	i. 145
treatment	ii. 569	Infantile sore mouth	i. 563
Hippocrates, account of.....	i. 24	Inflammation.....	i. 472
Historical sketch of medicine.....	i. 23	of the bowels.....	i. 617
History of Asiatic cholera.....	i. 731	of the brain.....	i. 539
Hives, bold.....	ii. 38	of the bronchiæ.....	ii. 84
Honey, diabetes.....	ii. 388	treatment	ii. 89, 98
Hooping cough.....	ii. 671	of the bladder.....	ii. 362
causes	ii. 671	treatment.....	ii. 365, 368
diagnosis	ii. 675	of the ear.....	i. 554
nature.....	ii. 676	of the fauces.....	i. 572
prognosis	ii. 675	of the intestines.....	i. 617, 631
recipes for.....	ii. 677, 681, 682	of the heart.....	ii. 223
symptoms	ii. 671	treatment	ii. 243
treatment	ii. 677	of the kidneys....	ii. 347
Hospital fever.....	ii. 683	treatment.....	ii. 355, 359
Humid tetter	ii. 570	of the larynx.....	ii. 17
Humid tetter	ii. 571	treatment.....	ii. 21, 32
Humoralists	i. 266	of the liver.....	ii. 269
Hunt, Dr. Robert, on epilepsy.....	ii. 724	treatment	ii. 277, 284
Hunter, on the blood	i. 491, 501	of the lungs	ii. 118
Hydatids	i. 193	treatment.....	ii. 130
Hydrothorax.....	ii. 547	of the mouth.....	i. 560
anatomical phenomena.....	ii. 550	of the œsophagus	i. 584
causes	ii. 551	of the peritoneum.....	i. 651
recipe for.....	ii. 553	of the pleura	ii. 102
symptoms	ii. 547	treatment.....	ii. 108, 115
treatment	ii. 551	of the stomach.....	i. 586
Hydropericardium	ii. 553	of the tongue	i. 570
Hyperæmia.....	i. 112	of the tonsils.....	i. 576
Hypertrophy	i. 136	Intestinal hemorrhage.....	ii. 518
Hypertrophy of the heart.....	ii. 248	anatomical developments.....	ii. 520
cases of.....	ii. 257	causes, diagnosis.....	ii. 521
causes.....	ii. 249, 254	treatment	ii. 522
physical signs.....	ii. 249	Introductory lecture.....	i. 21
prognosis.....	ii. 255	Irritability, diseased.....	i. 70
symptoms	ii. 250	Ischuria renalis.....	ii. 401
treatment.....	ii. 255	Itch	ii. 572
Hydrophobia.....	ii. 776	cause.....	ii. 573

	PAGE		PAGE
Itch—		Lead colic.....	i. 702
treatment	ii. 574	Leared, Dr., on cod-liver oil.....	i. 155
Jackson, Dr.'s, treatment of typhoid..	i. 452	Lepa, or leprosy.....	ii. 601
Jail fever	ii. 683	causes, treatment	ii. 602
Jaundice.....	ii. 293	Lewis, M., on typhoid.....	i. 439, 457
causes.....	ii. 298	Ligatures	i. 537
constitutional disturbance.....	ii. 296	Liquor sanguinis, elements of.....	i. 57
course of.....	ii. 297	Liver, inflammation of.....	ii. 269
diet in.....	ii. 301	acute	ii. 270
post-mortem	ii. 298	anatomical phenomena.....	ii. 272
symptoms	ii. 293, 296	associated with periodical	
treatment	ii. 298	fever	ii. 270, 272
Jessamine yellow.....	i. 299	causes	ii. 274
Jones, Wharton.....	i. 54	course and duration.....	ii. 272
Jordan, Dr., report on cholera by....	i. 757	diet in.....	ii. 281
		prognosis, treatment.....	ii. 277
Kidneys, inflammation of.....	ii. 347	chronic	ii. 282
acute.....	ii. 348	anatomical phenomena.....	ii. 284
anatomical relations.....	ii. 353	diagnosis, prognosis.....	ii. 283
causes.....	ii. 354	treatment	ii. 284
constituency of urine in.....	ii. 349	Liver, passive congestion of.....	i. 134
oxalic acid.....	ii. 350	Lumbricoides	i. 778
phosphatic diathesis.....	ii. 349	Lungs, hemorrhage from.....	ii. 495
uric acid.....	ii. 349	Aran, M., on	ii. 507
diagnostic symptoms.....	ii. 350	causes	ii. 499
local symptoms.....	ii. 348	post-mortem.....	ii. 502
termination	ii. 352	prognosis	ii. 501
treatment.....	ii. 355	symptoms	ii. 496
chronic.....	ii. 358	treatment	ii. 502
treatment	ii. 359	Lungs, inflammation of.....	ii. 118
Kidneys, granular degeneration of....	ii. 372	causes.....	ii. 127
Kine-pox... ..	ii. 625	diagnosis.....	ii. 126
King's evil (see scrofula).....	ii. 781	pathology	ii. 128
		periodicity	ii. 135
Large intestines, inflammation of... i.	631	post-mortem	ii. 128
Laryngitis	ii. 17	prognosis	ii. 127
acute	ii. 17	recipe for	ii. 138
anatomical developments.....	ii. 20	symptoms	ii. 119
causes	ii. 20	treatment	ii. 130
diet in.....	ii. 25	varieties of.....	ii. 118
treatment	ii. 21		
chronic	ii. 25	Magendie, on the blood...i. 503, 512, ii.	109
causes	ii. 30	on antimonials.....	ii. 111
diagnosis.....	ii. 31	Malaria.....	i. 282, 270, 31
elongated uvula, in.....	ii. 34	Malignant cholera.....	i. 731
enlarged tonsils, in.....	ii. 35	Malignant fever.....	ii. 68
post-mortem	ii. 32	Mania-a-potu	ii. 721
prognosis	ii. 31	anatomical phenomena.....	ii. 731
treatment	ii. 32	complications.....	ii. 730
		diagnosis	ii. 730

	PAGE		PAGE
Mania à potu—		Moist tetter—	
Gerhard, Dr., on.....ii.	739	treatment.....ii.	578
prognosis.....ii.	731	Morbid growths.....i.	174
recipes for.....ii.	745	Morbid states of the blood, how pro-	
stages and symptoms.....ii.	727	duced.....i.	52
treatment.....ii.	731	Morrow, Dr., decease of.....i.	34
Marasmus.....i.	140	on cholera.....i.	754
Marshall, Dr. Jno., on spinal irrita-		on intermittent fever.....i.	397
tion.....ii.	765	on yellow fever.....i.	423
Martin, Dr. J. C., on vaccine disease..ii.	626	Mumps.....ii.	668
McCall, Dr., on milk sickness.....i.	776	treatment.....ii.	669
McDowell, Dr., on salt as a remedy		Natchez, yellow fever at.....i.	395, 403
in consumption.....ii.	206	Necrosis.....i.	489
McVoy, Dr.'s, treatment of yellow		Nephritis.....ii.	347
fever.....i.	424	acute.....ii.	348
Measles.....ii.	657	anatomical relations.....ii.	353
anatomical relations.....ii.	661	causes.....ii.	354
causes.....ii.	661	constituency of urine in.....ii.	349
diagnosis.....ii.	662	oxalic diathesis.....ii.	350
eruption, character of.....ii.	658	phosphatic diathesis.....ii.	349
general symptoms.....ii.	658	uric acid diathesis.....ii.	349
premonitory symptoms.....ii.	657	diagnostic symptoms.....ii.	350
prognosis.....ii.	663	local symptoms.....ii.	348
treatment.....ii.	663	termination.....ii.	352
Medicine, art of.....i.	40	treatment.....ii.	355
historical sketch of.....i.	23	chronic.....ii.	358
science of.....i.	39	treatment.....ii.	359
Meigs, Dr., on croup.....ii.	48, 50, 51	Nephritis albuminous.....ii.	372
Melena.....ii.	518	Nerves, excito-motory and secretory..i.	87
Menorrhagia.....ii.	510	Nervous consumption.....i.	140
active.....ii.	511	Nervous diseases.....ii.	699
causes.....ii.	514	apoplexy.....ii.	699
passive.....ii.	513	treatment.....ii.	707
recipe for.....ii.	515	delirium tremens.....ii.	726
treatment.....ii.	514	treatment.....ii.	731
Mercury.....ii.	302	epilepsy.....ii.	711
Blackall, Dr., on.....ii.	335	treatment.....ii.	719
Carlisle, Dr., on.....ii.	333, 335	hydrophobia.....ii.	777
Desruelles, M., on.....ii.	311	paralysis, or palsy.....ii.	771
Dixon, Dr., on.....ii.	304	treatment.....ii.	775
Hamilton, Dr., on.....ii.	330	rheumatism.....ii.	746
Hays, Dr. Isaac, on.....ii.	307	treatment.....ii.	753, 757
Tweddie, Dr., on.....ii.	324	spinal irritation.....ii.	760
Methodics.....i.	26	treatment.....ii.	764
Miasmata.....i.	232, 270, 319	Nervous fever.....i.	430
Miasmatic remittent fever.....i.	319	Nervous functions, diseased.....i.	77
Michigan fever.....i.	318	Nettle rash.....ii.	584
Milk crust.....ii.	570	causes, diagnosis,.....ii.	585
Milk sickness.....i.	763	treatment.....ii.	586
Moist tetter.....ii.	577		

	PAGE		PAGE
Neuralgia, case of.....	i. 559	Phrenitis	i. 539
Neutralizing physic.....	i. 602	Phrenology, science of.....	i. 547
Non-malignant growths.....	i. 174	Phthisis pulmonalis.....	ii. 156
Nosology	i. 35	causes	ii. 185
Nurses' sore mouth.....	i. 567	diagnosis	ii. 188
Nutrition, diseases of.....	i. 135	predisposition to.....	ii. 158
		prognosis	ii. 189
Obstruction of the bowels.....	i. 710	recipes for...ii. 203, 204, 216, 218, 222	
Esophagitis	i. 584	symptoms, general.....	ii. 162
Organized tumors.....	i. 176	symptoms, physical.....	ii. 176
Otitis	i. 554	treatment	ii. 192
Ovarian dropsy.....	ii. 561	dietary.....	ii. 199
		by inhalation.....	ii. 220
Painters' colic.....	i. 702	medicinal	ii. 201
Palmer, Dr., on the blood.....	i. 502	tuberculous matter in.....	ii. 176
Palpitation of the heart.....	ii. 261	morbid anatomy of.....	ii. 178
causes, diagnosis.....	ii. 263	crude tubercle.....	ii. 179
treatment	ii. 266	granulation	ii. 178
Paralysis, or palsy.....	ii. 771	softening of tubercle.....	ii. 181
causes.....	ii. 774	state of the lung.....	ii. 182
definition	ii. 771	tuberculous infiltration.....	ii. 180
diagnosis	ii. 774	Physic, Dr.....	i. 680
hemiplegia, paraplegia.....	ii. 773	Physical diagnosis.....	ii. 71
prognosis, treatment.....	ii. 775	Physiology, province of.....	i. 42
Parasites, origin of.....	i. 784	Piles	i. 671
Parasitic animals.....	i. 192	Piperine, in intermittent fever.....	i. 300
Parotitis	ii. 668	Plethora	i. 112
treatment.....	ii. 669	Pleuritis, or pleurisy.....	ii. 102
Passive congestion.....	i. 129	abstraction of blood in, remarks	
Pathology, general.....	i. 39	on.....	ii. 108
Pathological investigation, methods		associated fever in.....	ii. 103
of.....	i. 43	autopsic developments... ..	ii. 105
Pectoriloquy	ii. 81	causes	ii. 106
Percussion	ii. 73	cough in.....	ii. 103
Pericarditis	ii. 223, 237	diagnosis	ii. 107
Periodicity of intermittent fever.....	i. 284	location, symptoms.....	ii. 102
Peritonitis	i. 651	physical signs.....	ii. 103
Perlee, Dr., on yellow fever.....	i. 395, 403	prognosis.....	ii. 107
Pernicious fever.....	i. 375	treatment.....	ii. 108
Pertussis.....	ii. 671	of chronic pleuritis.....	ii. 115
course and symptoms.....	ii. 671	recipe for.....	ii. 115
diagnosis	ii. 675	Pneumonia, or pneumonitis.....	ii. 118
nature	ii. 676	bilious.....	ii. 136
prognosis.....	ii. 675	causes	ii. 127
recipes for.....	ii. 677, 681, 682	diagnosis.....	ii. 126
treatment.....	ii. 677	pathology.....	ii. 128
Perverted nutrition.....	i. 145	periodicity	ii. 135
Perverted secretion.....	i. 104	post-mortem	ii. 128
Petechiæ.....	i. 436	prognosis.....	ii. 127
Petechial fever.....	ii. 683	recipe for.....	ii. 138

	PAGE		PAGE
Pneumonia, or pneumonitis—		Recipes—	
symptoms	ii. 119	for cholera.....	i. 750
treatment	ii. 130	for chronic pleuritis.....	ii. 115
typhoid	ii. 137	for delirium tremens.....	ii. 745
varieties of.....	ii. 118	for dropsy.....	ii. 543
Pollock, Dr. James E., on cavity in		for epilepsy.....	ii. 721
the lung	ii. 190	for hydrothorax.....	ii. 553
Polyæmia	i. 112	for hypertrophy of the heart.....	ii. 257
Porrigo	ii. 578	for intermittent fever.....	i. 293, 315
treatment	ii. 579	for lead colic.....	i. 706
Priests, early practitioners.....	i. 24	for menorrhagia.....	ii. 515
Prolapsus ani.....	i. 691	for nurses' sore mouth	i. 569
Prognosis, empirical, rational	i. 251	for otitis.....	i. 558-9
Proximate elements of disease.....	i. 107	for pertussis	ii. 677, 681-2
Psoriasis.....	ii. 597	for pneumonia.....	ii. 138
causes, treatment.....	ii. 599	for phthisis pulmonalis.....	ii. 204, 216, 218, 222
Pulmonary emphysema.....	ii. 140	for rheumatism.....	ii. 754-5, 758-9
causes	ii. 143	for worms.....	i. 789-90
morbid appearances.....	ii. 142	pod. lep. and taraxacum pill.....	i. 315
physical signs.....	ii. 141	pod. lep. sang. and tarax. pill...	i. 352
prognosis.....	ii. 144	quinia and iron.....	i. 344
symptoms.....	ii. 140	rochelia Virginiana.....	i. 651
treatment	ii. 144	tonic in ague.....	i. 315
Pumpkin-seeds, remedy for tape-		Rectum, diseases of.....	i. 664
worm	i. 792	Rectum, fissure of.....	i. 682
Purpura	ii. 461	Reflex nervous influence, disease of..	i. 87
causes	ii. 463	Remittent congestive fever.....	i. 358
diagnosis.....	ii. 464	Remittent fever.....	i. 318
duration	ii. 462	Remittent pernicious fever.....	i. 375
symptoms	ii. 461	Retention of urine in typhoid.....	i. 436
treatment	ii. 464	Revaccination, remarks on.....	ii. 637
Putrid fever.....	ii. 683	Rheumatism	ii. 746
Pythagoras	i. 25	acute	ii. 747
Quartan type of fever.....	i. 275	treatment.....	ii. 753
Quintan, and quotidian types of fever.	i. 275	anatomical characteristics.....	ii. 749
Quinsy	i. 576	chronic rheumatism.....	ii. 750
Rashes	ii. 581	treatment	ii. 757
Recipes: alterative sirup.....	i. 559	causes	ii. 751
antibilous physic.....	ii. 345	diagnosis, prognosis.....	ii. 752
antidyspeptic pill.....	i. 722	nature.....	ii. 747
compound tincture of tamarac... i.	314	nervous rheumatism.....	ii. 751
compound powder of rhubarb... i.	602	recipes for.....	ii. 754-5, 758-9
diaphoretic powder.....	ii. 246	subacute rheumatism.....	ii. 749
emetic powder.....	i. 640; ii. 152, 652	treatment, general.....	ii. 753
for anæmia.....	ii. 443, 446, 447	Rhus radicans, as a cause of milk sick-	
for bilious colic.....	i. 702	ness.....	i. 777
for bronchitis.....	ii. 101	Rhus toxicodendron, as a cause of milk	
for biliary calculi.....	ii. 291-2	sickness	i. 768
		Rochelia Virginiana, in dysentery... i.	651

	PAGE		PAGE
Rubeola.....	ii. 657	Scurvy—	
anatomical relations.....	ii. 661	symptoms.....	ii. 454
causes.....	ii. 661	treatment.....	ii. 458
diagnosis.....	ii. 662	Tweedie, Dr., on.....	ii. 449
eruption, character of.....	ii. 658	Secretion, disease of.....	i. 97
prognosis.....	ii. 663	Semple, Dr. R. H., on typhus.....	ii. 697
symptoms, general.....	ii. 658	Sensibility, diseased.....	i. 78
symptoms, premonitory.....	ii. 657	Sensibility, reflected.....	i. 96
treatment.....	ii. 663	Ship fever.....	ii. 683
Salt rheum.....	ii. 568	Sick stomach, or milk sickness.....	i. 763
Scabies.....	ii. 572	Small pox.....	ii. 605
causes.....	ii. 573	causes.....	ii. 615
treatment.....	ii. 574	confluent.....	ii. 608
Scald head.....	ii. 578	diagnosis.....	ii. 616
treatment.....	ii. 579	distinct.....	ii. 605
Scarlatina, or scarlet fever.....	ii. 639	modified.....	ii. 611
anginosa.....	ii. 642	morbid anatomy.....	ii. 614
causes.....	ii. 646	prognosis.....	ii. 617
diagnosis, prognosis.....	ii. 648	symptoms and course.....	ii. 606
maligna.....	ii. 643	first stage.....	ii. 606
morbid anatomy.....	ii. 645	second stage.....	ii. 607
sequelæ.....	ii. 644	third stage.....	ii. 608
simplex.....	ii. 639	treatment.....	ii. 619
treatment.....	ii. 649	prophylactic measures.....	ii. 624
Schirrus.....	i. 177	Smith, Dr., on treatment of typhoid.....	i. 460
Science of medicine.....	i. 39	Softening of tissues.....	i. 147
Schönbein, on the influence of ozone.....	i. 234	Solids, disease of the.....	i. 63
Scorbutus (see scurvy).....	ii. 448	Solidists.....	i. 266
Scrofula.....	ii. 780	Sore mouth.....	i. 560
constitutional.....	ii. 784	Sore throat, character of.....	i. 572
causes, exciting.....	ii. 785	Spasmodic cholera.....	i. 730
“ predisposing.....	ii. 786	Spasmodic colic.....	i. 695
nature.....	ii. 788	Spanæmia.....	i. 108
symptoms.....	ii. 784	Spinal irritation.....	ii. 760
local symptoms.....	ii. 781	diagnosis.....	ii. 764
predisposition to.....	ii. 786	manifestations.....	ii. 760
symptoms.....	ii. 787	Marshall, Dr. John, on.....	ii. 765
prevention of.....	ii. 790	treatment.....	ii. 764
treatment.....	ii. 789	Spleen, chronic disease of.....	ii. 342
tuberculous deposits in.....	ii. 782	causes, morbid anatomy.....	ii. 343
cause.....	ii. 783	prognosis, treatment.....	ii. 344
character, effects.....	ii. 782	Splenitis.....	ii. 338
relation to pulmonary.....	ii. 783	causes.....	ii. 340
Scrofulous cachexy.....	ii. 784	diagnosis, prognosis.....	ii. 340
Scurvy, or scorbutus.....	ii. 448	symptoms.....	ii. 338
anatomical characters.....	ii. 457	treatment.....	ii. 340
causes and nature.....	ii. 448, 457	Sporadic cholera.....	i. 723
diagnosis.....	ii. 458	Stages of fever.....	i. 258
nature.....	ii. 452	St. Anthony's fire.....	ii. 587
		anatomical character.....	ii. 590

	PAGE		PAGE
St. Anthony's fire—		Tissues—	
causes	ii. 590	deposits, in and upon.....	i. 158
diagnosis, prognosis.....	ii. 592	Tobacco, injection of.....	i. 715
symptoms	ii. 587	Tongue, inflammation of.....	i. 570
treatment	ii. 593	Tonicity, disease of.....	i. 74
Statistical report on cholera.....	i. 757	Tonsilitis.....	i. 576
Sterelmintha.....	i. 194	Tracheitis.....	ii. 38
Sternalgia.....	ii. 428	inflammatory	ii. 42
Sthenic hyperæmia.....	i. 113	treatment	ii. 61
Stomach, inflammation of.....	i. 586	pseudo-membranous	ii. 44
Stomach, passive congestion of.....	i. 134	treatment	ii. 65
Stomatitis	i. 560	spasmodic	ii. 40
Stomatorrhagia	ii. 486	treatment	ii. 59
treatment	ii. 487	Tubercles, in consumption.....	ii. 176
Stricture of the rectum.....	i. 664	Tubercle, scrofulous	ii. 782
Strongylus gigas.....	i. 194	relation of, to pulmonary.....	ii. 783
Structural diseases.....	i. 135	Tweedie, Dr., on consumption.....	ii. 168
Struma (see scrofula).....	ii. 780	on diabetes.....	ii. 390
Subsultus and sordes.....	i. 435	on dropsy.....	ii. 533
Sudamina.....	i. 434	on hepatitis.....	ii. 275
Sun pain	i. 281	on inflammation.....	i. 499
Sympathetic nervous system.....	i. 328	on mercury.....	ii. 324
Symptomatic fever.....	i. 266	on palpitation of the heart.....	ii. 264
Symptomatology.....	i. 239	on scurvy	ii. 449
Syncopc.....	ii. 413	Typhoid fever.....	i. 429
causes.....	ii. 414	Typhus fever (see congestive) ..	i. 37, 358
diagnosis.....	ii. 415	Typhus fever.....	ii. 683
symptoms	ii. 413	anatomical changes.....	ii. 690
treatment	ii. 416	causes	ii. 692
Tænia	i. 781	convalescence.....	ii. 689
Tantini's cases of congestive fever...	i. 385	cutaneous eruptions	ii. 688
Tapeworm.....	i. 781	diagnosis.....	ii. 693
Temples of Æsculapius.....	i. 24	duration	ii. 690
Tetter	ii. 568	nature.....	ii. 695
treatment	ii. 569	prognosis	ii. 694
Tetter, humid.....	ii. 570	symptoms during the fever	ii. 684
treatment	ii. 571	“ nervous.....	ii. 686
Tetter, moist.....	ii. 577	“ premonitory	ii. 683
treatment	ii. 578	“ thoracic	ii. 686
Termination of inflammation	i. 478	treatment	ii. 696
Tertian type of fever.....	i. 275	varieties	ii. 689
Thomas, Dr.'s, treatment of yellow		Typhus icterodes.....	i. 388
fever.....	i. 426	Types of fever.....	i. 275
Thread worms.....	i. 780	Ulceration of the mouth.....	i. 565
Throat, disease of.....	ii. 17	Ultraists.....	i. 26
Thrush.....	i. 563	Urine, incontinence of.....	ii. 410
Tinnitus aurium.....	i. 540	treatment	ii. 411
Tissues, degeneration of.....	i. 149	Urine, retention of.....	ii. 405
softening of.....	i. 147	renal, vesical.....	ii. 406

	PAGE		PAGE
Urine, retention of—		Varioloid.....	ii. 611
treatment.....	ii. 407	Vesicular murmur.....	ii. 75
Urine, suppression of.....	ii. 401	Vocal resonance.....	ii. 78
causes.....	ii. 403	Vogel, on biliary calculi.....	ii. 288
treatment.....	ii. 404	on dropsy.....	ii. 536
Urticaria.....	ii. 584	on worms.....	i. 785
causes, diagnosis.....	ii. 585	Voluntary motion, disease of.....	i. 83
treatment.....	ii. 586		
Uterine hemorrhage.....	ii. 510	Ware, Dr.....	i. 430
active.....	ii. 511	Washington, General, treatment of.....	ii. 23
passive.....	ii. 513	Willis, on periodicity.....	i. 285
recipes for.....	ii. 515	Wind colic.....	i. 695
treatment, causes.....	ii. 514	Wood, Dr., definition of disease by... i. 42	
Vaccine disease.....	ii. 625	on bleeding.....	i. 335, 337
Martin, Dr. J. C., on.....	ii. 626	on croup.....	ii. 52
protective influence.....	ii. 633	on intermittent fever.... i. 303, 307	
revaccination.....	ii. 637	on pernicious fever..... i. 379, 382	
susceptibility to.....	ii. 632	on remittent fever.....	i. 333
treatment.....	ii. 636	Worms, varieties of.....	i. 778
Varicella.....	ii. 665	origin of.....	i. 784
causes.....	ii. 666	treatment.....	i. 788
diagnosis.....	ii. 667	Yellow fever.....	i. 388
symptoms.....	ii. 665	Yellow jessamine.....	i. 299
treatment.....	ii. 667	Yellow tubercle.....	i. 164
Variola (see small pox).....	ii. 605		

ERRATA.

- Page 222. Line 6 from top, insert f $\bar{3}$ before iv.
- " 223. Last word of caption, for *Pericardium* read *Endocardium*.
- " 371. Line 6 from top, after *solution* add (*filtered*).
This wash contains about $3\frac{1}{2}$ grains of the chloride in a f $\bar{3}$ of infusion.
- " 447. Line 10 from bottom, before *tragacanth* read *gum* instead of *opium*.
- " 697. Line 8 from top, for *Huntry* read *Hunter*.

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